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RAIL-ROAD NEWS.

Examination of Railroads.

MESSRS. EDITORS—In reading the article in No. 14 of your journal "The Way to Examine a Railroad," I was led to the conclusion that it would be well for the presidents of other roads to pursue a similar plan. A few days since, while walking on the New York and Erie road, in company with a friend, I observed, within the distance of a mile, six of the keys used in the chairs entirely out and lying by the side of the rail, and several more partially out on the side on which I was walking. A number of the rails were badly split, —in one case the splinter was over two feet long, and so loose that my weight, in stepping on it, would press it together, apparently, a quarter of an inch; in another place the rail was crushed down so far that its upper surface was not more than one and a half inches wide. On arriving at a bridge, I asked the flag-man if those rails were safe; "oh yes," he replied, "perfectly safe, it is no matter whether the keys are in the chairs or not, the spikes will hold them." But it appeared to me they were *not* safe. C.

Elmira, N. Y.

New York and Erie Railroad.

This road is the longest, under one corporation, in the United States, and its construction was the greatest undertaking ever projected, so far as natural difficulties were to be overcome, and the great amount of money required to complete them. The yearly report, for 1851, is a very favorable one; the whole cost of the road and equipment was $23,580,000. The receipts, last year, were $2,776,919, 59. It is calculated that the receipts, next year, will be as much as $4,000,000, and the running expenses only 48 per cent. of the receipts. It is intended to construct 100 miles of a double track in 1852.

New York and New Haven Railroad.

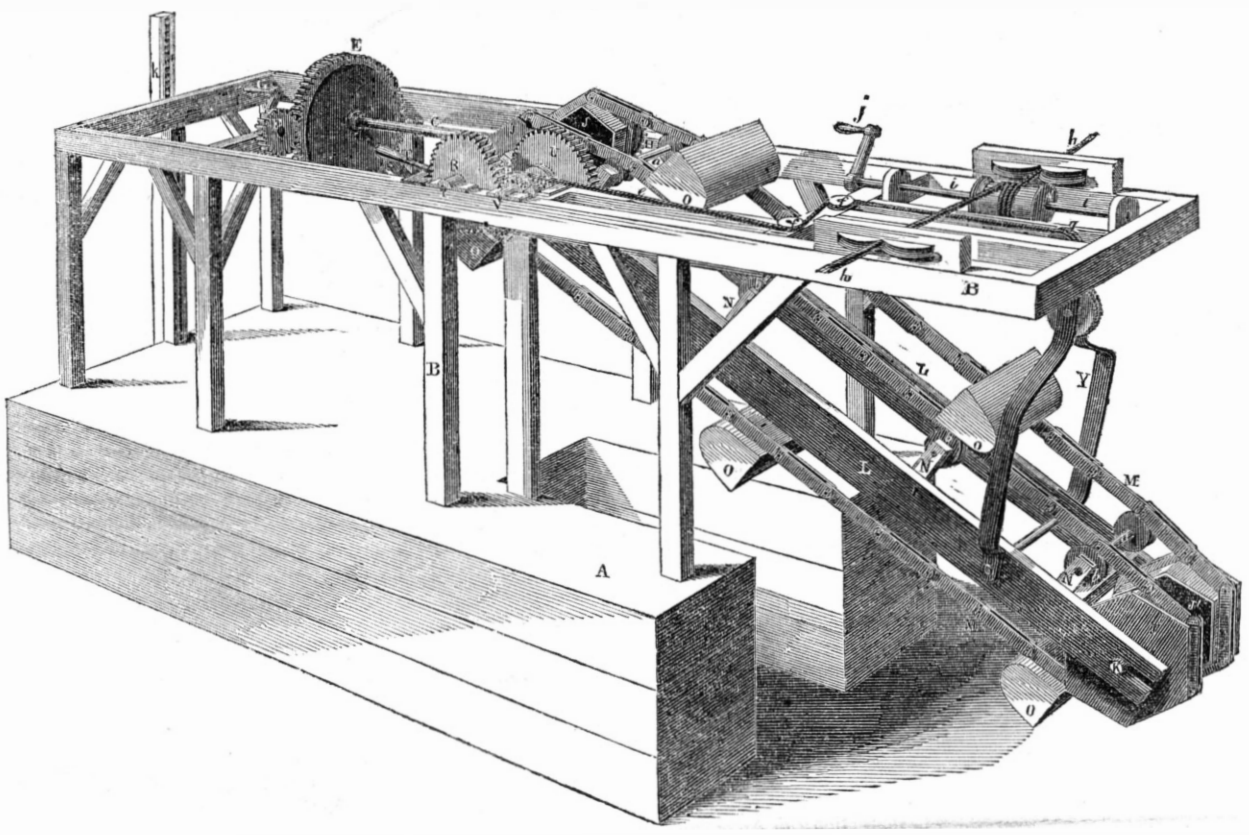
The number of passengers conveyed over the New York and New Haven Railway during the months of July, August, September, October, and November, 1851, was 298,020. During the same months last year, the number was 352,853. Increase in five months this year, 46,076. The average number of passengers carried daily the present year is 2,400.

Creosote.

Persons cannot be too cautious how they use this dangerous liquid. The Williamsport (Maryland) Sentinel gives the following account of a recent case in that town:—"A gentleman purchased creosote of one of our druggists, and after applying a portion to the tooth, he rubbed a small quantity on the gums and cheek of one side of his face. Shortly the muscles on the face on that side commenced to contract, and refuse to close. More than a week elapsed yet the disfiguration still continued. The safest plan is not to use creosote."

Barley straw is the best for filling mattresses, and should be preferred to wheat, oat, or other straw.

FRASIER'S IMPROVED EXCAVATOR,



The accompanying engraving is a perspective view of an improvement in apparatus for excavating or dredging in rivers and harbors, and invented by Mr. Anthony Frasier, of Montezuma, Cayuga Co., N. Y., as briefly noticed by us last week, and who has taken measures to secure a patent for the same.

A represents a scow, and B B the frame erected on the same to support and sustain the machinery. L L is the movable frame that supports the buckets, O O, which are secured on two endless jointed chains, M M, which revolve around the ends of the frame, L, which has octagon sheaves, J' J', fixed on a shaft, K, at the lower end. The chains run over friction rollers, *b*, above, which are supported on uprights, N N. By applying the power of the steam engine to the crank, G, the pinion, F, takes into the cog wheel, E, which moves the shaft, C, and this has a bevel pinion (not seen) which takes into the bevel wheel, and moves the shaft, I, on which are the upper octagon sheaves, J J, of the bucket frame, and these are made to revolve, giving motion to the chain of buckets; thus the way the buckets are made to revolve will at once be understood. The distinct features of the improvements are now to be described. One principle of this improvement is, that, without the scow moving, the scoops can cut out or excavate any depth—two, four, or more feet in one place. To do so, the bucket frame is made to descend, and to descend so exact that if one bucket cuts only five inches deep, the frame will have descended exactly five inches, when the next bucket begins to act or excavate. This is done by feeding down the bucket frame by appropriate gearing. Y is a large double bracket secured to the outer part, near the end of the bucket frame. It has a pulley at its upper part, placed between the shoulders of the said bracket. The end of a chain or rope is made fast to an eye on the top of the double bracket, from thence it passes over a small grooved pulley, *g*, then down over the pulley between the shoulders of the bracket, and from it up over another small pulley, *g* (there are two, beside one another, on the same spindle), secured on the top permanent frame. From this the said chain or rope, *e*, passes along over the peripheries of two separate horizontal pulleys, *f f*, and then over a windlass roller, W, to which the other end is made fast. It is the motion which the said windlass receives that feeds down the bucket frame gradually, as spoken of, or lifts it up suddenly, as may be desired. A clutch is employed to work the windlass, W, as desired. The head of the clutch is not seen, it is placed on the main shaft, I, of the bucket frame, and always revolves with it, but by a feather it is made to slide backwards and forwards on the same shaft, to take into catches on the inside of the large cog wheel, R, and into catches on a collar of a pinion (not seen) close to J, which takes into the large cog wheel, U, on the windlass shaft. T is the lever or handle of the clutch. If it is desired to raise up the bucket frame quickly, the clutch, by the handle, T, is made to take into the catches of the large cog wheel, R, which then moves with the shaft, I, and acts upon the pinion, P, on the windlass shaft, V, which turns the said windlass quickly, winding up the rope or chain, *e*, on it, and thus raising the bucket frame rapidly. By throwing out the clutch between the wheel, R, and the pinion inside of it, the said wheel will not revolve, the shaft, I, will revolve inside of it, while the clutch will revolve with the shaft between the pinion and the cog wheel, R. To feed down the bucket frame regularly to excavate or scoop to the depth spoken of, the clutch is made to gear into the pinion inside of R, which gears thereby with the cog wheel, U, on the windlass shaft, and gives it but a slow motion. It is the relative proportions of the said pinion and the said cog wheel, U that feeds down the bucket frame in a proper manner. Thus the feeding and raising of the bucket frame are explained.

By the arrangement of the buckets, they pass over the sheaves, J' J', and cut their whole width under, at a depth below the said sheaves or ways. This is an improvement over the arrangement of buckets which scoop between *ways* on the frame; *k* is a setting post to retain the scow. The rope, *h h*, passes over a drum on the shaft, *i i*, and is worked by a crank, *j*. This rope extends to a pole on each side (not shown), but driven down to steady the vessel and hold it fast. By turning the drum in any direction, the rope, *a*, will bring round the head of the scow to the one side, as desired, and thus its position for excavating in a new line can be easily brought about; the post, *k*, is also shifted to bring round the stern. We believe that the various movements and operations will be easily understood from the foregoing description.

More information may be obtained by letter addressed to Mr. Frasier.

Vegetable Extracts and Quack Medicines.

It is quite common for dealers in quack medicines to advertise the same as being "purely vegetable." This is presuming upon the ignorance of the multitude. At one time, long ago, vegetable medicines, with the exception of alum and sulphur, were exclusively used, and when science had developed the virtues of mineral medicines, old prejudices were soon arrayed against the evils of the "new drugs" The same prejudices still exist in the minds of many, hence we hear of "herb doctors" being the most safe. They believe that mineral medicines are more dangerous, but this is all sheer nonsense, for the most virulent poisons are extracted from herbs. What is opium but a vegetable extract, and beside this a great number of minerals are extracted from vegetables, at least they can be. Morphine, *nux vomica*, strychnia, solania, nicotine, and many other dreadful poisons, are vegetable extracts. How nonsensical then to speak of medicines being more safe or valuable because they are obtained from vegetables. It is well known that mushrooms—a certain kind—are cooked and used as an article of diet, yet in the class of mushrooms there are some deadly species, yea, the species generally used for the table, at some seasons and when growing in some localities, are highly poisonous. A few weeks ago we read an account of some Bavarian officers, who were poisoned by eating common table mushrooms, and they died in the most frantic delirium, in spite of the best medical skill and attention.

Adulterated tea is becoming more common every day. There is scarcely a pound of good tea to be found: it is adulterated first in China, and then it undergoes a finishing process when it comes here.

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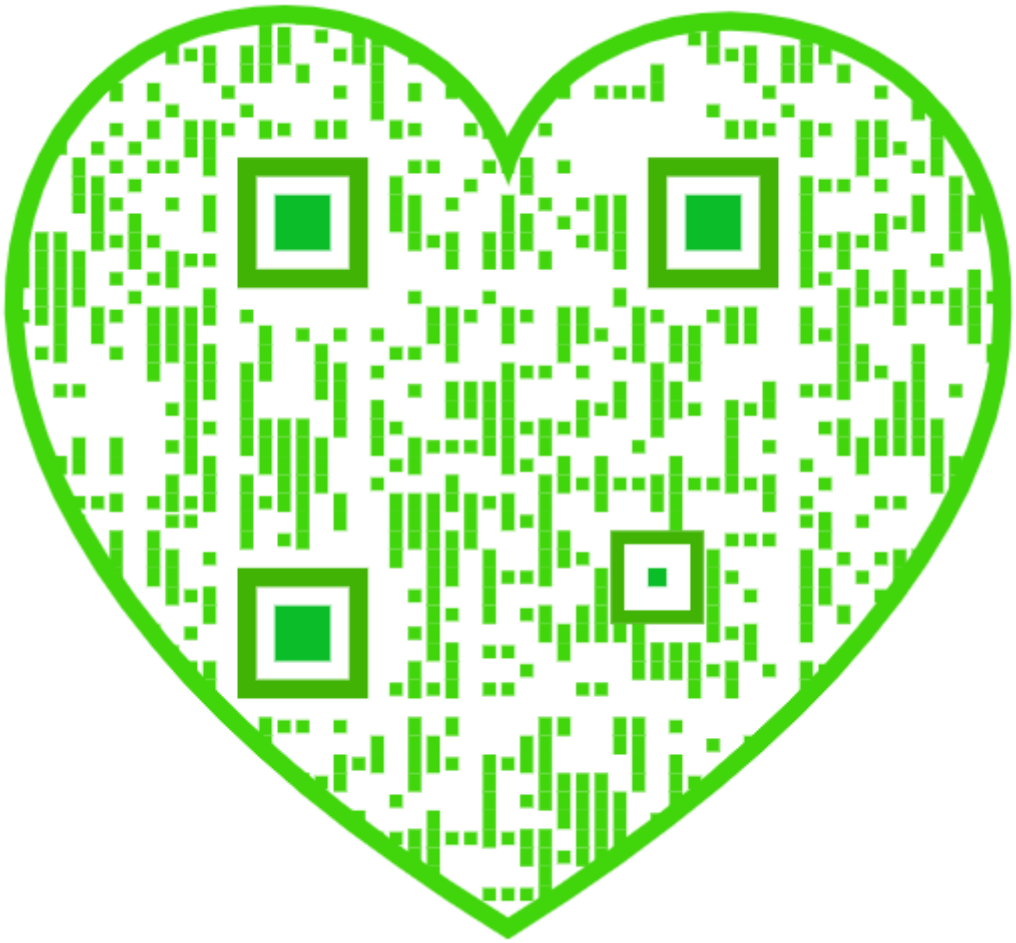

MISCELLANEOUS.

Steam Carriages for Common Roads.

I noticed in the Scientific American, of last week, some remarks respecting a company that has been organized in New York, named "the American Steam Carriage Company," for the ostensible purpose of employing and running steam carriages on common and plank roads. I believe that steam carriages can never be successful on common or plank roads —not that steam carriages cannot be made to run at the rate of eight or ten miles an hour, for that is nothing new; it was done twenty years ago by Gurney, in England, and done well, too, but neither Gurney's, nor any other steam carriage can be made to compete with horses, economically, on common or plank roads, especially in these United States, where horses and horse feed are so cheap, and where common and plank roads are employed more by farmers, who require their own teams at any rate, than by any other class. The question may be asked why were steam carriages not successful on common roads in England, for that is a country more favorable for them than ours? This is an important question, and one which should be asked by every person before he enters upon such a speculation. No man is wise who does not sometimes look behind. Gurney's Steam Carriages, I have been informed, ran for nearly a year in England, but did not pay, and they were laid aside. The common roads in England are more level than our streets, and smooth as a carpet. Fuel is exceedingly cheap there; steam engines can be built at less cost than with us. Gurney's carriages were not mechanically defective—they were well built; the engines were of exquisite workmanship, and no fault was found with their principles. On the other hand, horses are two-thirds higher in price in England than in the United States, and the cost of keeping them is at least twice as much.—When they were first tried neither the locomotive nor the railroad were near so perfect as they now are; they had everything in their favor, and, it might be said, "all chances to win and none to lose," and yet they failed to compete with horses; the horse stages drove them off the roads at last. If steam carriages for common roads failed in a country where they had so much in their favor, what can they do in our country, where there is so much against them.

On undulatory roads, locomotives have not yet been made to run successfully. I have seen more than one locomotive for ascending and descending inclinations, with safety. Not one of them has been successful, economically, although they were entirely so mechanically. The scheme looks like a speculation, for so far as it relates to improvements, as a new system, it looks like a scintillation of the days gone by. With our splendid railroads, it is folly to speak of steam carriages plowing through the mud, toiling up the hills, and crushing down again. The scheme is neither plausible nor payable. There is not a common road in our country of any length, and I have seen not a few of them, on which a steam carriage could run at all. On our plank roads they could run very well, but all such roads are rural—they are for our farmers, and *they* never will pay for steam and keep their own teams in their stables. The question is simply one of economy; and although it may be said that great improvements have been made to perfect the new steam carriages; no one will surely pretend to say that the improvements are worth fifty per cent., and yet unless they are seventy-five per cent. they cannot be made to compete with horse power in our country.

It may be said that "all new schemes have met with such opposing views;" but this scheme, as a system, is not a new one, and those interested in static pressure engines, fire annihilators, &c., have used the same arguments about opposition. The proof of the value of any improvement is its practical working economy; and I do say that, on common roads, two horses, valued at $100 each, will do as much work, day in and day out, in a year, as a steam carriage engine that will cost $1000, and which, for fuel, will cost ten times more than the feed for the horses. The great benefit of plank roads (and we cannot admire and estimate them too highly) is the facility they afford to our agricultural population with their teams, not the commercial and travelling community; for the latter class, I say railroads —first, last, and forever, in all cases.

Williamsburg, N. Y. ~~.

[We have received an article on this subject from Mr. Fisher, inventor and Secretary of the Co.—it was too late for this No.—Ed.]

Railroads and their Management.

Please accept the heartfelt thanks of an engineer for your defence of them, contained in your article on railroad accidents, in No. 15 of the present Volume, and the publicity you have given to apparently unrecognized facts, "that engineers have every inducement to avoid accidents, their own personal safety and reputation depending thereon; also, that accidents are more the result of a bad system than carelessness on their part."

But in your address to the Legislature, I would humbly propose the following amendment:—That all railroads, already chartered, be required to have a second track as soon as practicable, and that, until the completion of said second track, the number of trains to be run daily, on said road, be fixed and limited; for if the public convenience requires many trains, the more reason for a second track.—Here lies the great danger—a vast number of trains on a single track.

The Telegraph you propose would be as subject to abuse as the present "Rules and Regulations" are: through the inexperience and carelessness of the operator, mistakes and misunderstandings would occur, which would be as productive of accidents as the present system.

You say, "to construct roads cheaply is good policy," and then cite the English roads as the most safe; now this seems to me to contain a contradiction; for the English roads are not cheaply constructed; although they may cost less for a term of years, from their freedom from accidents and the frightful destruction of life and property, which mark the "exploitation" of American roads.

The safety of the English roads is owing principally to their solidity of construction, directness of route, and evenness of grade, requiring less power to operate them, and the wear and tear of material is consequently far less; another very important item is, they are enclosed and guarded. The bridges, also, are substantial enough to admit of the same speed over them as on other parts of the road. How is it with us in this last particular? For your better information read the Rules and Regulations of the Harlem Railroad, and, if it suit your convenience, ride out as far as Mott Haven, and judge for yourself, if those rotten dilapidated structures, called bridges, are fit for trains to pass over them at any rate of speed, and yet fifty trains cross them daily.

There is another feature in the European roads not to be overlooked; in their construction the Company are obliged to comply with the statute, and in some cases government engineers inspect the material used, and their signature to the fact, that all the requirements of the law have been complied with, is necessary before the road can be operated.

Is there in the whole United States any law regulating the construction of railroads, so as to render them safe as modes of transit? Or, do not their charters give the companies free license to build just such roads as best suit their interest. On the New York and Erie road three accidents have occurred, caused by broken rails; is there not a disproportion between the strength of those rails and the weight they have to sustain? I am so informed at least.

In conclusion I would ask—Would it not be well for the state to appoint a Commission of able Engineers (above corruption) to examine into the condition of the railroads now in operation, particularly the bridges, which are mostly of wood and notoriously unsafe in many cases, and report thereon to the Legislature, whose right it is to provide for the public safety. M.

[In respect to our remark about the policy of making cheap roads, we did not intend, by any means, to imply that bad roads should be constructed; the best road is the cheapest in the end. We entertain the same opinions as our correspondent.

Mineral Wealth of Greenland.

A scientific expedition that set out last year from Copenhagen, in Denmark, for Greenland, with a view to examine into the mineralogical wealth of the great chain of hills which divides that country throughout its entire length, has, it is reported from Denmark, already met with encouragement towards the prosecution of its researches. On the very first breaking ground in the mountains neighboring the Danish colony of Julianehaab, the party came on copper formations, lying close to the surface, branching away in three several directions, and appearing to have great horizontal extent. The engineers placed at the head of this expedition are sanguine, from the great analogy observable between the conformation of the Ural Mountains and that of the hills of Greenland, in their expectation of finding in the latter mines of gold, of platina, and perhaps of silver.

Coal Mines of England and America.

The following article from the Galena (Ill.) Observer, is very interesting; the author writes correctly, and is evidently acquainted with the mining operations and laws of England:—

"The depth at which our Illinois coal is dug is but a pin scratch on the globe, compared with the diggings in the English coal mines. One shaft, near Sunderland, is perhaps the deepest in the world. The coal was first found one thousand six hundred feet below the surface, and it is now worked at one thousand seven hundred, and one thousand eight hundred feet! These English mines employ large bodies of workmen. In one there are one hundred and thirty-six men and eighty-five boys below ground, engaged in fourteen different kinds of labor, and one hundred and twelve men and twenty-eight boys above ground, in seventeen occupations, and three hundred and sixty-one workmen in all. The names of the classes of workmen are singular: under-viewers, banksmen, drivers, hewers, putters, headsmen, half-marrows, foals, stoppers, or door-keepers, &c. The hewers are the actual miners of the coal, and receive about twenty shillings a week, working six hours a day, with coal and house rent free. Children under eight years of age are now excluded by law, and the barbarous harnessing of females to the coal carts in the pits is prevented. Our Illinois diggings are comparatively dry. The English mines often pump one thousand gallons a minute, or six thousand tons a day; one near Durham pumped twenty-six thousand seven hundred tons of water per diem! The use of steam power in our coal mining is yet to come. In the north of England, engines of two hundred and fifty horse-power are in common use at the pumps. At Percy Main, near Newcastle, engines of five hundred and sixty-six horse-power are in operation, four hundred and forty horse-power being employed in pumping alone. But little capital is employed in the business here. It is estimated the cost of a first class English colliery, including the shaft, machinery, houses, wagons, &c. &c., is from £40,000 to £150,000. The deepest coal is the best. As our Illinois beds are worked deeper, they will furnish an article as good, and ere long better than the Pennsylvania coal. Adjoining the great unworked colliery, which stretches across our State from central Iowa to northern Kentucky, manufacturing cities will soon arise as busy as Pittsburg, perhaps as smoky. And coal, more and more valuable for manufacturing purposes, for solidity, density, heat-giving, &c., will be brought up as the progress of our north-western manufacturing towns make a demand for it.

Revolving Fire-Arms.--Claims of Another Inventor.

Messrs. Editors—Will you allow me the pleasure of informing the readers of the Scientific American that my brother, William Avery, invented a revolving pistol in the winter of 1837-8. He demonstrated a number of plans for revolving the barrel, but considered the one which (by compressing the handle which was, as it were, double), rolled the barrel, and cocked and fired the pistol, the one that would ultimately come into use. When he was urged to apply for a patent, he refused, saying the invention was not called for, and its application would be worse than useless. My brother, Cyrus Avery, of Tunkanock, Pa., Mr. Hiram Scovill, of Chicago, Ill., George Whiting, of Camillus, and many others, are knowing to these facts.

Samuel Avery. M. D.

Syracuse, December 30, 1851.

Origin of the Turf Bogs in Ireland.

Formerly, Ireland was a vast forest. So powerful was the vegetation there, that it was called "the Island of Wood." It is now almost destitute of trees; and when on a fine day in spring, it appears, though bare, full of sap and youth, it seems like a young and lovely girl deprived of her hair. It is not exactly known at what time and by what process this destruction was effected. We may, however, be assured that it was before the Christian era, and probably at a much more ancient date. Some attribute it to an extraordinary inundation, which uprooted the trees, levelled forests, and buried them in the bosom of the earth. Others, whose opinion is better supported by scientific study, believe that the ruin of the forests was the result of violent storms. When the lofty forests that covered the country were compact and entire, they afforded each other mutual support against the violence of the tempests; but, in proportion as man requiring an open space for his house and field, effected clearances here and there, the trees near those that have been cut down were without support against the fury of the hurricane, and fell before blasts that were previously powerless; every ruin occasioned by a tempest produced a thousand others, rendered more easy as they were multiplied. The work of destruction went on, and all the fallen trunks, descending by the natural declivities to lakes and the marshy parts of the soil, were stopped on this liquid base, where, heaped one on top the other, year after year, they were mingled together, some preserving their natural form, others decomposing into vegetable matter until they formed that spongy, combustible substance, sometimes red and sometimes black, of which the vast turf bogs of Ireland are composed.

[This is the account, from an exchange, of the formaton of peat bogs in Ireland. There are some peat bogs in New Hampshire, Maine, and New York. England and Scotland, especially the latter country, was just about as famous for bogs or mosses at one period as Ireland now is. Large black oak trees are found at a great depth in some of these bogs, and the above seems reasonable enough, but tradition attributes the great change in Ireland and Scotland to floods, and in all likelihood many of those bogs are the result of geological upheavals and depressions.

Passages of the Atlantic Steamers from Liverpool.

We are unable to publish our regular quarterly list of the passages made by the American and British Steamships, running from Liverpool to this city; the reason of this is, that we neglected to record two passages—the Europa's last and that of the Baltic. We shall keep a correct list for this year, and by the end of it we shall see the result. During the past year the American steamships, especially during the last quarter, have made passages averaging two days faster than the Cunard line, This is a great deal—a vast difference in point of speed. It has been stated that the two new steamships intended to be put on the Cunard line, which are very large, will be very fast. There can be no doubt but the larger the vessel—all things else being equal—the faster the passages. We shall see what they will do in the course of the year.

The Fulton Steamship.

This old steam frigate has been all remodelled, and has had new engines put into her by Messrs. Dunham, of this city. On a trial made last week, it is stated she ran twenty miles in one hour and nine minutes, and that she beat the San Jacinto nearly ten miles in that short period. This is a pretty highly colored story, we should think.

Steam to Ireland.

By the late news from Europe, it is stated that a new company is forming in London, and has applied for an act of incorporation, for establishing steam communication between Ireland and the United States.

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Qualities of Timber---The Proper Time for Cutting it.

We commence, in this number, to present a few brief articles on the subject indicated in the above caption. It had been our intention to present them some time ago, but this, perhaps, is the very best time we could have selected—the beginning of a New Year—when the whole of the seasons are before any of our readers who may also choose to make experiments. The articles, with the consent of the able author, are selected from Griffith's Naval Architecture.

"We are glad to learn that the Navy department have adopted measures to determine the best or proper time for cutting timber, and the best mode of curing it, or securing it against dry rot; in connection with this, their investigations also combine a determination of the specific gravity. Those experiments are confined to the three principal kinds of ship timber, viz., live-oak, white oak, and yellow pine, and will be of incalculable benefit to the naval and commercial interests of the United States; when we remember that there is no table of specific gravity that is at all reliable for any meridian of North America, and that our mechanics have been making calculations from tables of specific gravity found in European works, we shall begin to approximate a conception of its value; a location in the timbered districts of this wooded country (for practical purposes) will satisfy the most incredulous that little is known about the productions of the American forest—a location of two years for this purpose, satisfied the author that he knew but little about the natural science of the forest timber growth of the United States. We are doubly gratified to learn that this important and responsible trust has been committed to Mr. James Jarvis, of Virginia, a mechanic whose unbending energy and zeal in the dischargeof duty, fully qualifies him for this important trust, and who, having filled the office of Inspector and Measurer of Timber for the Government, at its principal depot, for many years, has acquired a knowledge of its defective properties to an extent unsurpassed, doubtless, by any man in this country. Mr. Jarvis has discretionary power given him by the Department at Washington; he has kindly furnished us with the result of his experiments for the first year, commencing on the 15th of September, 1849, and continuing in regular order up to the 15th of August, 1850.

These experiments will perhaps be better illustrated in the following order:—On the 15th of September he received, in twelve feet lengths, the butts of ten trees of live-oak, and an equal number of white oak and yellow pine. Five of each kind were worked square at the place where cut, and the remaining five were brought round with the bark on; after their arrival they were subdivided into 3 feet lengths. The squared pieces are from 12 to 15 inches square; the round pieces in bark from 12 to 15 inches in diameter. The specific gravity of each piece is at once obtained, and they are located as follows: 4 pieces of the squared live-oak, and 4 pieces of the round live-oak in bark, are placed in tanks under cover, where are the solutions of corrosive sublimate, copperas, alum, and coal tar. The same number of white oak and yellow pine pieces, amounting in all to 32 pieces of each species of ship timber, one half of which are square pieces, the other half round and in bark. These live-oak, white oak, and yellow pine pieces were kept in the tanks submerged one month, at the expiration of which time they were distributed as follows: under cover, in open air, planted as posts and laid as railroad sills. There is a suitable number of the pieces which have not been prepared, also under cover, in open air, planted as posts and laid as railroad sills: a proportion of the pieces, one square, and one round, are water-seasoned for six months; after being removed from the water, two pieces are made of one, and one kept under cover, the other in open air. The pieces which have not been in the solutions, are the *test pieces;* amongst these pieces Mr. Jarvis has fitted some together, wood and wood, except having between them tarred paper coated with charcoal dust. A few years will prove, by occular demonstration, which of the solutions, substances, or water, will make timber most durable. The pieces which have had no preparation on them, and are kept under cover, are weighed each month, to observe the amount of the juices or moisture lost by evaporation in one month and in one year. The weighing of the first piece felled in September, 1849, had been weighed twelve times in August, 1850; therefore it will take until September, 1851, before the timber felled and received in August, 1850, can be weighed twelve times. The object in weighing or obtaining the specific gravity each month in the year, is, that he may be able to determine the best time for cutting ship timber, or whether it is of any material consequence; and by testing the weight of the same kinds of timber in connection with its durability, and thus set this matter at rest.

The timber used for these experiments is thus described:—The live-oak and white oak are of excellent quality, and felled purposely for those experiments, with a few exceptions. The yellow pine is not as good as is used in the Navy: its specific gravity will not prove the fact. The very best of yellow pine is not of the greatest density. Pitch-pine is not as good for decks or deck frames as other fine-grained pine from the South. There is a species of yellow pine from about Wilmington, N. C., whose specific gravity is about the same as the pine used in the experiments, and corresponds (difference of time when cut considered) with that found in the table of specific gravities of dry timber—610. The very best yellow pine timber is that in which the even fineness of the grain is continued to the centre or pith of the tree. By careful observation, much information that is valuable may be obtained from the tables of specific gravity. Notwithstanding the thickness of the bark on the yellow pine, and its lightness (the specific gravity differing not materially from that of cork), we find that the pine timber in bark weighs much more than the square timber; this, to the casual observer, would hardly seem possible; the man unacquainted with the nature of yellow pine sap-wood, would be likely to doubt the correctness of the table; but such is the nature of the exterior coating immediately under the bark of yellow pine, that we cannot find a more analogous substance than that of sponge; its retentive properties are very similar, and the turpentine with which this sap-wood is saturated, is the cause of its increased specific gravity above that of the squared timber when covered with bark. The thinner the sap-wood the less the specific gravity.

There is an error in the prevailing opinions in relation to the durability of yellow pine timber. Our Government has become a heavy stockholder in this prevailing error, by acting on the supposition that yellow pine timber required a great amount of seasoning. The consequence has been, that large timber houses have been erected and filled with yellow pine timber, which has been kept for many years, and when in a state of decay has been used both for new vessels and those undergoing repairs; this is a great mistake; an equal number of months would have answered a better purpose than as many years. As it regards the shrinkage of yellow pine, when in pieces of any considerable size, it shrinks but little when the vessel is in active service, and when used as deck plank should be made narrow. The convictions of our judgment lead us to this conclusion, that yellow pine requires no seasoning to make it durable; the ebb and flow of turpentine is through the sap, as the specific gravity will show; hence we say, that the capillary tubes of the heart wood have no more of the resinous property (if cut at a proper season) than is required for strength, and to render it durable, which we think Mr. Jarvis's experiments will fully prove. The continued use of yellow pine timber in the private shipyards of New York city, has already proved it incontestably; we could name ships, built in this city some twenty-five years ago, that have their first yellow pine beams in their decks, and we could point to others that have exhibited a durability in their deck frames unknown in the Navy of the United States. Proper care should be taken to clear the timber of all sap; and as it regards shrinkage in the naval vessels, if the same measures were adopted as in the private yards, of making strakes of plank narrow, we think there will be no cause of complaint; the strakes of deck plank, clamps, and bulwarks of Navy vessels are too *wide*."

(To be continued.)

Recent Foreign Inventions.

Gas Burners.—Mr. Harding Hallen, of Burslem, England, recently obtained a patent for an improvement in gas burners, which consists of fire-clay, or other clay composed of any mixture of potters' materials with metal, in the construction of gas-burners, the external portion of the burner being of metal, and that portion of the burner in which the holes are pierced being made of clay, which is much better calculated to resist the action of the flame or the corrosive action of the products of combustion, which speedily destroys gas-burners made entirely of metal. The improved compound gas-burners are also more accurately manufactured in the first instance, and insure a uniform and permanent flame, which will retain its size and shape for any lengthened period.

The drawings in the specification represent a fish-tail burner and an Argand burner constructed according to the invention, the external portions thereof being composed of metal, and the inner portions of a button, and a ring of clay respectively. The button for the fish-tail burner, and the ring of the Argand burner are each formed in suitable moulds, while the clay is in a plastic state, after which they are dried and burnt till of sufficient hardness, when they are fixed into their place in the body of the burner, either by cement alone or by burnishing down the edge of the metal upon the upper surface of the clay. It is obvious that a great many varieties, if not all kinds of gas-burners may be formed in the manner just explained for forming fish-tail and Argand gas-burners; that is to say, by the insertion of perforated buttons, rings, or pieces of pot or fire-clay into that part of the burner through which the gas issues.

India-Rubber Cement.—Mr. Alfred Newton, recently obtained a patent for the accompanying improvements relating to India rubber compounds:—

They consist in compounding or combining the gum called gum-lac, or gum shellac, or seed-lac, or stick-lac, with caoutchouc or India rubber. The materials are combined in various proportions, according to the purposes to which the compound is to be applied. Sometimes one part of the caoutchouc is combined with from one to eight and more parts of gum-lac or shellac; and sometimes one part of gum-lac or shellac is combined with from one to eight parts of caoutchouc. The greater the proportion of the caoutchouc employed, the more elastic the compound will be; and the greater proportion of gum-lac or shellac employed, the stiffer, harder, and less elastic will the compound be. The two ingredients are mixed together, mechanically, by grinding or trituration, or by means of their solvents, in the manner well known to manufacturers of caoutchouc.—Among the advantages to be derived from the combining of gum-lac or shellac with caoutchouc are—an economy in the manufacture, and the prevention of the disagreeable odor which generally pertains to India rubber compounds.

When the compound is intended for the manufacture of any thin fabrics, it has been found useful to mix with it a small quantity of finely-divided sulphur, either by grinding or triturating the sulphur with the compound, or by mixing with the compound a solution of sulphur in a solvent of sulphur, or by applying the finely-divided sulphur in the form of dust or powder to the surface of the thin fabrics. The proportion of sulphur thus employed is very small: it may be about one pound of sulphur, finely divided, to one hundred pounds of the compound. The fabrics, made of the compound thus mixed with sulphur, or dusted with sulphur, should be exposed to the rays or heat of the sun until the compound is deprived of its stickiness.

Gum-lac or shellac, when combined with caoutchouc, by means of camphene or other solvents, makes a useful cement for many purposes. To make this cement, one part of gum-lac or shellac is mixed with two parts of caoutchouc, by grinding or triturating them together in the usual manner; and then a sufficient quantity of camphene, or other solvent of caoutchouc is added, to render the compound of the proper consistency. A small quantity of finely-divided sulphur is generally mixed with the cement:—say two or three ounces of sulphur to one pound of the composition used.

When the compound of gum-lac or shellac, prepared with finely-divided or dissolved sulphur, is used to make thin fabrics or masses, the inventor submits the compound, so prepared, to a high degree of artificial heat (say about 270° Fahr.), for the purpose of curing or vulcanizing the prepared caoutchouc.

We are indebted to our invaluable exchanges, "Newton's Repertory of Arts," "Patent Journal," "Mechanics' Magazine," and other London Journals," and to the "Genie Industriel," &c., of Paris, for the above, in substance.

Interesting Hebrew Relic.

By the politeness of Col. Lea, Commissioner of Indian affairs, we have seen a curiosity of great rarity and interest, left for a few days at the Bureau. It was brought from the Pottawatomie Reservation, on the Kansas river, by Dr. Lykins, who has been residing there nearly twenty years of the thirty he has spent on the frontier. It consists of four small rolls or strips of parchment, closely packed in the small compartments of a little box or locket of about an inch cubical content. On these parchments are written in a style of unsurpassed excellence, and far more beautiful than print, portions of the Pentateuch, to be worn as frontlets, and intended as stimulants to the memory and moral sense.

Dr. Lykins obtained it from Pategwe, a Pottawatomie, who got it from his grandmother, a very old woman. It has been in this particular family about fifty years. They had originally two of them, but on one occasion, as the party in possession were crossing a rapid in some river in the lake country of the North, the other was irrecoverably lost. The one lost was believed by the Indians to contain an account of the creation of the world. That brought by Dr. Lykins has been kept for a very long period in the medicine bag of the tribe, used as a charm, and never allowed to suffer any exposure, until, by strong entreaty and the great influence he had with Topinepee, the principal Pottawatomie chief, he was permitted to bring it on to Washington, but under a firm pledge to restore it on his return.

It has hitherto been most carefully kept from the rapacious vision of the white man. Pategwe had it in his possession many years before his curiosity prompted him to cut the stitches of the cover and disclose the contents. But this coming to the knowledge of old Billy Caldwell, chief of the Council Bluff branch of the tribe, he strenuously advised Pategwe to shut it up and keep it close, and say nothing about having it. Dr. Lykins came to a knowledge of the circumstance of its possession from a half breed.

The wonder is how this singular article came into their possession. When asked how long they can trace back its history, they reply they cannot tell the time when they had it not. The question occurs here, does not this circumstance give some color to the idea, long and extensively entertained, that the Indians of our continent are more or less Jewish in their origin?—[National Intel.

[There is some *hocus-pocus* about this piece of parchment which has apparently a near relationship to the woolly horse—at least that is our view of the subject. The Indians have not a single Jewish trait about them.

Frauds in the Weight of Coal.

A correspondent of the Philadelphia Ledger justly points out the frauds perpetrated upon those who purchase coals by the ton. The ton of coal, he says, should be 2,240 lbs. and not 2,000. He warns the citizens of Philadelphia against being cheated by small coal carts, and suggests the passing of a law to protect the purchasers of coals being cheated. In New York nobody thinks of getting 2,240 lbs. for a ton, and every purchaser knows that cheating in weight is a very common sin, but one very difficult for those who purchase coals in cart loads to detect and provide a remedy. We know of no business where honest men are more required, and where dishonest men can act with more impunity than in coal dealing.

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NEW INVENTIONS.

Improvement in Grain Drills.

Mr. Benjamin D. Saunders, of Holiday's Cove, County of Brooks, and State of Virginia, the inventor and patentee of a most excellent grain cleaner, has invented and taken measures to secure a patent for an improvement in Drills for sowing grain, the nature of which improvement consists in distributing the seed by means of cylindrical tubes, placed horizontally underneath the hopper, the said tubes have a rod working through them, on which are placed circular heads, a head working in each tube. A reciprocating motion is given to the rod and heads by a lever attached to one end of the rod. The lower end of the lever has a friction roller upon it, which is operated by a cam placed on the axle of the wheels, and this is set so as to give a faster or slower stroke to the rod passing through the tubes, so that the said rods, with their heads, which push the grain out of the tubes, distribute it faster or slower as may be desired. The grain is pushed out first at one side and then at the other of the horizontal tubes, by the rods, and from them it falls into troughs, and then is conveyed into the hollow teeth of the drill.

Improvement in Casting Iron Wheels.

Mr. William Dripps, of Coutesville, Chester Co., Pa., has invented and taken measures to secure a patent for an improvement in casting car wheels, with solid hubs, by which the contracting of the metal while cooling is made more uniform throughout the whole wheel, and this prevents cracking, and makes a much stronger wheel. A pipe connected with a reservoir of water passes through the centre of the hub, and the cold water passing through this pipe cools the wheel at the thickest part equally with the thinner parts of the casting. This pipe may be coiled round the hub or pass through it, as may be desired; the principle of the cooling is the same in both cases, the manner of application only is different.

New Paddle-Wheel.

A new Paddle-Wheel, termed the "Fan Paddle," invented by a Mr. Stephens, in London, has been tried on the Thames, on one of the steamboats. The improvement in the construction of the paddle consists in the use of fixed oblique floats joined endwise, and diminishing towards the centre in the shape of a lady's fan. A steamboat of the same build and the same power was run against the one with the new paddle, and the trial resulted in favor of the latter. The best way, however, to have tested the value of it, would have been to have taken its speed tried with the old paddle and then with the new.

Hospital on Ward's Island.

It is in contemplation, by our city authorities, to build a new Hospital on Ward's Island. We have examined the design of Messrs. B. E. & Ira Buckman, practical carpenters and builders, No. 94 Fulton street, this city. The design is a good one, in our opinion. It is proposed to heat the whole building by steam, conducted through hollow metal pillars, upwards, and horizontally through metal pipes. We have seen a building heated by Count Rumford's plan—very large steam pipes—and we liked it. The method of ventilation—a most essential feature for an hospital—is excellent in Messrs. Buckman's plan. There is an opening in each room, in the wall, communicating with a vertical passage like a chimney, to take off the foul air. Each passage is to be regulated by a slide, and thus every room can be kept properly ventilated and at the proper temperature, at all times.

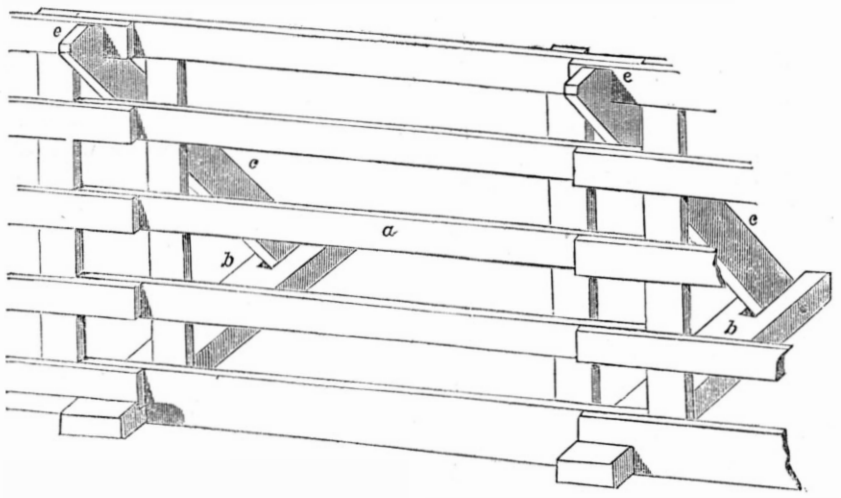
Tubular Metal Tunnel.

A submarine metal bridge has been projected by a Mr. Cunningham, architect, of Liverpool, who has submitted a project to the directors of the various railway companies interested in the communication between Birkenhead and Liverpool, for all kinds of transit.

Mr. Cunningham proposes to sink an iron tube in the bed of the river, buried so completely below the surface thereof that there would be no more obstruction to the currents than at present. The tube would have perpendicular sides and an arched roof. It would be placed in a prepared bed, and would be protected outwardly by various contrivances. Internally there would be two lines of rails running on each side of the tube, with a passage way for pedestrians. The entire work, it is estimated, would not cost more than £250,000.—[Boston Journal.

[This we believe is a feasible project, and will be carried out at no distant day. A few years ago the people of Albany, N. Y., got out a charter for building a tunnel upon the plan of the London one, under the bed of the Hudson. Here is a more practical project in every sense of the term. We hope they will take the hint. It would be a good undertaking to be superintended by Mr. Seymour, whose state office is now at an end. Let the people of Albany think of it. The heavy city tax we suppose, would be the only objection.

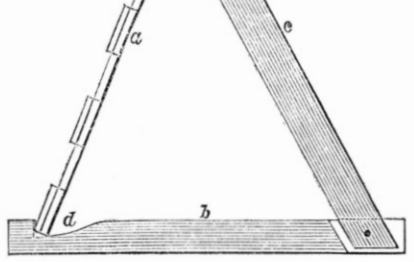
PATENT HURDLE FENCE.---Fig. 1.



The accompanying engravings represent an improvement in Hurdle Fences, invented by Mr. Cyrus Cole, of Rushville, Ontario Co., N. Y., and for which a patent was granted on the second of last month (Dec., 1851).

Figure 1 is a perspective view, and figure 2 is a cross section. The same letters refer to like parts. The improvement is upon the perpendicular fence, and consists in the mode of

Fig. 2.

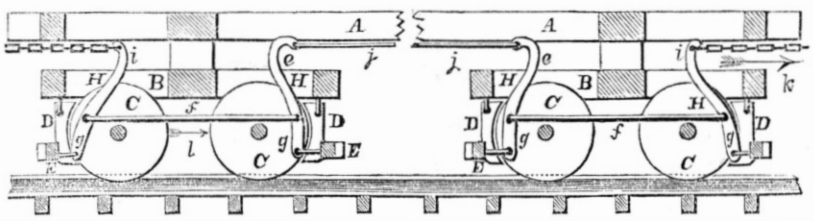


setting up and connecting the brace pieces therewith. Panels are formed of ten or twelve feet, according to the length of the boards, and by placing four or five strips parallel, and nailing cross strips to them at right angles, the panel, *a*, is made; the brace pieces consist of a strip of scantling, *b*, which rests upon the top of the ground, and has firmly affixed to one end of it a brace, *c*, that extends up in an inclined position over the ground sill, *b*; at the front end of the sill, opposite where the brace is fixed, there is a notch, *d*, into which the lower edge of the panel rests, and another notch, *e*, in the upper end of the brace locks in between the upper and second horizontal strip of the panel, and the whole is compactly fastened; the second panel overlaps the first, as shown in the engraving, and so the fence is continued, there being a brace at each junction of the panels.

It will readily be seen that by this means a cheap and durable fence can be produced, any panel of which can be removed for a gate, and the whole can be taken up and housed, if need be, in winter. The claim is for the method of locking and supporting the same by means of the notched sills and lock braces, as described.

More information about rights, &c., may be obtained by letters addressed to Mr. B. F. Gage, of Canandaigua, N. Y., who will attend promptly to the same.

PATENT RAILROAD BRAKE.



The accompanying engraving represents an improvement in Railroad Car Brakes, invented by Mr. Francis A. Stevens, of Burlington, Chittenden Co., State of Vermont, and for which a patent was granted on the 25th of last November. The improved brake is attached to an eight wheeled car. The brake is constructed in such a manner that the friction shoes of all the wheels of the car are brought into action simultaneously, and each shoe throughout the whole series is pressed against its respective wheel with the same amount of force.

A is the frame of the car; B B are the frames of two four wheeled trucks. Each wheel, C, of each truck is fitted with a friction shoe, D, and the two friction shoes of each pair of wheels are connected by a brake beam, E, extending across the truck. Each brake beam is connected at its middle with the lower arm of an upright brake lever, H, and the fulcrums of the two brake levers of a truck are also connected by a link rod, *f*. The upper arm, *i*, of the brake lever which is nearer the end of the car is connected by a rod or chain with the brake wheel, and the upper arm, *e*, of the brake lever nearer the middle of a car, is connected by a rod with the upper arm of the corresponding brake lever of the other truck.

If a force is applied to draw the chain at one end of the car in the direction indicated by the arrow, K, while the chain at the opposite end remains stationary, the whole series of levers and shoes will be moved, and the shoes will all be pressed against their respective wheels with equal force, for the force exerted upon the first lever is propagated by means of the link rods to the succeeding ones. Thus, for example, if the longer and shorter arms of the levers bear to each other the relation of 3 to 1, and the chain be drawn with a force of 100 pounds, the pair of shoes operated by the first brake lever, will be pressed against their wheels with a force of 300 pounds, while the fulcrum rod, *f*, will be drawn in the direction indicated by the arrow, *l*, with a force of 300+100=400 pounds. The fulcrum of the next succeeding brake lever, having thus a force of 400 pounds applied to it, and as its arms bear to each other the foregoing stated relation of 3 to 1, its shorter arm will press forward its shoes with a force of 300 pounds, while the longer arm will act through the link rod, *j*, upon the longer arm of the next succeeding brake lever with a force of 100 pounds. This latter will act upon its respective shoes in the same manner as the first lever in the series, and with the same force; the pressure upon its fulcrum will also be communicated to that of the last brake lever, which will act in the same manner as the second one in the series. It is therefore evident that by connecting the brake levers alternately by their arms and fulcrums, as herein set forth, the force exerted to move one will be propagated throughout the series of any number.—This system of brakes is not confined in its application to a single car; the force applied to a single brake wheel may be propagated throughout the whole train by merely connecting the brake chain of each car with the succeeding one. In this case, the upper one of the last brake lever in the train will become the fixed point in the whole series, and all the levers will be moved to press their respective friction shoes against their wheels with the same force as the one which is moved directly by the brake wheel chain. This arrangement of brakes may be variously modified without affecting the principle of the invention. The claim for the invention is the arrangement whereby each wheel of a car is retarded with an uniform force, when the brake is put in operation.

This brake is in use in the Rutland and Burlington Railroad (Vermont), and L. Bigelow, Esq., the Agent, and John S. Dunlop, Esq., the Superintendent, have said that it is the best brake in use, and that it has advantages over all others. The uniform and equal application of the retarding power, to all the wheels, will at once be recognized. It must effect a saving upon some of the wheels, over the common brake, and in this respect its advantages are of no small consequence.

More information may be obtained by letter addressed to Mr. Stevens.

House-Heating.

Say what you will, the heat derived from the best cellar-furnace is unpleasant, suffocating, and unhealthy. The open coal grate makes dirt and wasteful consumption, almost equal to the furnaces. Close stoves of all kinds, where there are ventilating flues to keep the air circulating, are the best contrivance we have for economy and comfort; yet they give out an eye-smarting, throat-drying something that is disagreeable, and cannot be healthy.

We have thought of coarse porcelain, such as is said to be in use for wood-stoves in Germany. Iron seems to let through its pores something deleterious from the fire, whether you burn wood or coal. It may be that it is a disturbance of the electric condition of the air that is produced—probably this is the evil. If porcelain could prevent this, the benefit to the public health and comfort would be immeasurable.

Is it within the knowledge of the Scientific American to say where such porcelain cylinders can be had to order? We will adventure the expense confident of success.

ANTHRAX.

New York, Dec. 21, 1851.

[We do not know where such porcelain can be had; and for burning anthracite they would not last very long unless encased with iron, like our stoves that are lined with fire-brick. The brick answers the same purpose as the porcelain. Fire-brick stoves and flues are common in Russia; for workshops they should be more common with us; they are much healthier than iron stoves.—ED.

Alta California.

California is a great country in more respects than one, and for newspapers, we believe, she is about at "the top of the heap." The Alta Californian is one of the handsomest papers in the world.

Circular Saws.

We will present some very excellent and practical information on this subject in our next number. This subject has excited a great deal of attention, and no wonder, for the lumber interests of our country are very great, and becoming more so every day.

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Scientific American

NEW-YORK, JANUARY 10, 1852.

American Philosophy---Maury's Sailing Directions.

The early efforts and original discoveries of American philosophers, have been duly acknowledged by the whole civilized world. Of old, we had our Franklin and Rittenhouse, —and for peculiar original discovery the name of Franklin stands very high. In many departments of science our country has recently earned a proud name, but in none so much, we think, as in that peculiar department at the head of which stands Lieut. Maury, U. S. N. America is a great nation, second to none, but as a nautical nation she is the greatest in the whole world, with the exception of Great Britain, and from the very nature of the case our country will, in a few years, be greater than her. The navigation of the seas, then, is at present, the most important of all sciences to our country. To this subject Lieut. Maury has devoted himself with all his energy, great learning, and keen perceptive faculties. There are some men who only can improve—act upon the suggestions of others; these never make peculiar original discoveries. This is not the case with him; he has developed a new field of observation, and this field is studded with new, brilliant, and useful discoveries to the marine interests of our great nation and the world. We have before us his third edition, enlarged and improved, of "Sailing directions," also his "Wind and Current Charts," they are monuments of which we should be far prouder than the most gorgeous marble tablet ever raised to commemorate human greatness.

The Wind and Current Charts of Lieutenant Maury include the Oceanic Currents, the Course of the Winds, and the Temperature. These Charts are constructed upon positive data of observations made by captains ot vessels in all the various months of the year, and in the various parts of the oceans which cover two and four-fifths of the area ot this planet. A knowledge of the winds at the various seasons of the year, has, by these charts, enabled commanders of vessels to shorten their voyages from the United States to the Equator. A knowledge of the currents of the ocean is of immense importance to navigators, as one single fact will distinctly prove. At one time vessels sailing from England to New York, during the winter season, took a long southern course, and made for Charleston, S. C., which was in almost every sense, the half way house; this was before the Gulf Stream was known to practical navigators, which, in many places, is nearly at a blood heat, and often reaches 90°. At that time Charleston was the greatest seaport in America, and vessels from England to New York, frequently ran down to the West Indies, and wintered there. American navigators were the first who discovered the way to make short voyages. The merchant vessels which sailed between London and Providence, used to make passages in two weeks' less time than the Mail Packets between Falmouth and Boston; and when Franklin was questioned, in London, upon the subject, he inquired the reason of an old New England captain, who informed him that the Providence vessels were generally commanded by New England fishermen, who knew how to avoid the Gulf Stream, while the Falmouth captains were Englishmen, who knew nothing about it. At that time Franklin made it known to navigators that, by simply dipping a thermometer in the water, they could know when they entered and cleared the Gulf Stream. This discovery changed the route across the Atlantic, and shortened the passage from 60 to 30 days. This changed the course of trade; vessels coming from England, instead of running to Charleston, went direct to their port of destination, and when attacked with severe cold, or snow storms, they stood off for a few hours until they reached the tepid waters of the Gulf Stream, in the general warmth of which the crew recovered their frosted energies, and as soon as the gale abated, were ready for another attempt to make their haven. In this way stations were shifted, and Charleston lost its pre-eminence as a seaport.

We learn from this work of Lieut. Maury how New York became the great seaport of the Union. Its rise is attributed to Quaker regularity:—in 1816, Jeremiah Thompson, Isaac Wright, and others, established a line of packets of 300 tons burden, to sail regularly every month to Liverpool. At that time, Philadelphia and Boston had about as much trade, but for the first time in our commerce, the New York Packets sailed regularly on their advertised days, and this Quaker punctuality turned the scale in favor of New York. It gave an impulse to prosperity, and it has now become the commercial emporium of the New World,—and, let us say, it will be of the whole world in 1870. "All these results are traceable to the use of the thermometer at sea." Truly, may we say, upon how small a thread does the fate of cities and nations sometimes hang.

Lieut. Maury commenced these charts with the desire that they should be exclusively the work of American navigators, and that American seamen should furnish all the materials that were peculiar to the work. Before this, American navigators were exclusively indebted to British surveys, which often guided them safely through dangerous places. Many true-hearted Americans have nobly seconded his efforts, while others, we regret to say, have looked coldly on his labors. Others are beginning, in other parts of the world, to follow Lieut. Maury's example, and thus knowledge is increased. Mr. Macfarlane, Assistant Surgeon of the Bombay Geographical Society, has made considerable progress in Wind and Current Charts, belonging to that great country—a country which has 6,000 miles of seacoast.

We would be glad to know that every captain of a vessel in our country was acquainted with the information contained in these Charts and Sailing Directions—but this we are sure is not the case; many mariners are too conservative for their own interests. American navigators, however, are less so than those of any other nation; we therefore anticipate from their use an untold amount of benefit to the commerce of our country.

Quinine.

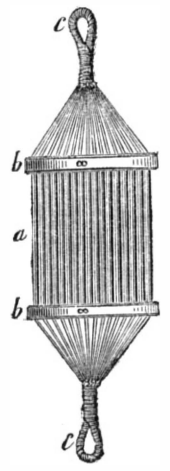
This is a drug that is now very extensively employed in medicine, and it is the leading one of the Chrono-Thermal system of Dr. Dickson. Its composition is C.20, H.12, O.2, N. (carbon, hydrogen, oxygen, and nitrogen). It exists in the bark of the *Cinchona cordifolia*. There are several species of cinchona which grow in South America, but which are generally divided into three varieties—the red, yellow, and pale. The red furnishes a reddish brown powder when pulverized, and has a bitter taste; the yellow Peruvian bark closely resembles the red, and the pale is much the same, only a greater quantity of quinine is found in the yellow than in the other two—the pale having the least.

The sulphate of quinine is the substance so extensively used in our country for fever and ague. It is made by taking bruised yellow bark and boiling it in repeated portions of water acidulated with sulphuric acid. The decoction is then strained, and milk of lime added, which precipitates the quinine. The precipitate is collected, washed, and dried; it is then powdered and digested in alcohol, which takes up the quinine. The alcohol is evaporated, and the quinine is obtained in a yellow uncrystallizable substance; it is then dissolved in dilute sulphuric acid, and the sulphate of quinine crystallizes from a concentrated solution of it, Bone black, which is extensively used for purifying other substances, is also used to purify this. It is intensely bitter, and effloresces in the air. One pound of bark yields only about 107 grains of quinine, hence it is sold at a very high price. The crystals are very beautiful.

This drug is subject to great adulteration, it being often mixed with starch, sugar, cinchona, &c. In the Chrono-Thermal system of treating fevers, bark, or quinine, or opium, are administered in the intervals of relapse from fever. The Peruvian bark is the great prolonger of healthy relapse from fever. The general prescription, in this method of treatment is to give an emetic first, when attacked with chills and pain, and after that give bark in small doses, and perhaps a mild aperient. Peruvian bark is taken easily with wine, and to produce rest about 12 drops of laudanum should be given along with half a tea-spoonful of the powdered bark, in halt a glass of wine, for a grown-up person, and the half of that for a person between 10 and 20 years of age.

India-Rubber Power Accumulators.

Last week, on page 128, Scientific American, we mentioned the cicumstance of an English gentleman having proposed to apply India-rubber tubes as "Power Accumulators." His name is R. E. Hodges, of London, and he has secured a patent for the same. He recently addresssd a letter to Mr. Robertson, editor of the Mechanics' Magazine, on the subject, which was accompanied with some sketches, one of which we have selected to show our readers what the invention is.



This represents 151 vulcanized india-rubber tubes, each one foot long and all of them contained within an area the diameter of which is 12 inches. Its power is stated to be equal to 4 tons, 7 cwt., 17 lbs., and its own weight only 65 lbs. *a* are the tubes; *b b* are the ring bands; *c c* are the loops or eyes. These tubes will stretch to about seven times their length, and being quite elastic return again to their original length—one foot. It is the self-inherent continual effort to return to their original length, which has induced the inventor to call them "new power accumulators," for according to the power applied to extend the accumulator, so will it return or exert a like force in returning to its original length. They have the advantage of being very usefnl on board of ships, as they float on the water. They can be applied to relieve the sudden jerking on ship's cables, standing rigging, and tow-lines. An accumulator can be inserted as a spring in any part of the cables, or tow-lines; or an accumulator can be secured to the deck by a hook passing through one eye, *c*, and the end of the cable, &c., through the other eye. These accumulators would make excellent railroad buffers. By keeping an accumulator in a state of tension, it then has an accumulated power, and when convenient, it is attached to the body to be moved when the rope which holds it is eased off, and the body to which it is attached is then quickly removed.

The Aztec Children.

There have been on exhibition for some time, at the Society Library Room, this city, what are termed the Aztec Children. It has been stated that they are of a race of pigmies —rather the remnant of a race—away down in Central America. They have created no small sensation in this and other cities, and we do not wonder at it; they are great natural curiosities. We have no faith, however, in their being a distinct race from the South American Indians, nor have we faith in the romantic story published, about their capture and the stealing of them from the place where, it is said, they were held as objects of wonder. We believe they are Indian dwarfs. The profile of the boy is exactly like that ot the figures found on the ruins of those cities in Central America, described in "Stephen's Travels:" this proves conclusively that the present race of Peruvians, &c., are the same as those which built those ancient cities. The Aztec Children are lively, have beautiful black curly hair, and very large black eyes. They are very slender, and the girl appears to be the best formed; she looks like some Indian children, with the exception of the large eyes and curly hair. The boy would afford strong argument for a believer in the Montboddo theory: he has some distinct trait of the Simian tribe. The girl appears to be about 6 years of age, the boy 12; the height of the boy is 34 inches, the girl 29½. The upper lip ot the boy projects to a great distance, and he appears to be incapable of ejecting his spittle.

They are interesting specimens of undeveloped humanity, and of a peculiar race of aborigines, still living, but descendants of the oldest tribes in America. They are the greatest objects of natural curiosity that we have ever seen; they are fixed curious facts in natural history, and Prof. Agassiz could make a most splendid article out of them, in proof of distinct species of the human race.

Repeal of a Patent in England.

A case was recently tried before Lord Campbell and a special jury, on a writ of *scire facias*. This was an application to repeal a patent which has been illegally granted, and the action is placed the Queen versus the Defendant. The crown, in this case, must come before the Jury. The case we are about to speak of was the application for the repeal of a patent granted in 1843, to one Steiner, for the manufacture of Garancine (a dye from spent madder, for an account of the process of making it—see page 107, Vol. 6, Sci. Am.) The defendant, Steiner, contended that his patent was good, as he was the first who introduced the process into England from France, and it was a most valuable discovery. It was alledged, on the part of the witnesses to repeal the patent, that the process was known and practtced among chemists and color makers, in calico print-works, for years before 1843, when the patent was secured; also that the process of manufacture had been published before 1843, in a French work called "Le Manuel du Fabricant d'Indiennes," and this work had been known and purchased in England, before the patent was secured.

A great many witnesses were examined on both sides, and Lord Campbell charged the Jury, that if the discovery was new, or first introduced into England by Steiner, they must decide in his favor; if not, then against him and for the Crown. The Jury returned a verdict against the patentee, and the patent was repealed.

Dr. Colton and the Fire Annihilator.

The spunky little Doctor came out in a long Card in the Tribune of last Wednesday, against the report, and the persons composing the Committee, mentioned by us two weeks ago; also against the Journal of Commerce. Giant Colton intends to annihilate all the scribblers and papers—the Journal of Commerce especially—for speaking out upon the Annihilator. The Doctor is great upon gas for extinguishing flame; but, then, it is very absurd for him to try it upon facts——they are sturdy things and cannot be annihilated.

The Gas Contract Vetoed.

The old New York Common Council, with a recklessness and flagrancy not to be surpassed by any of the old English Rotten Boroughs, recently passed a resolution annulling the contract of the present Gas Co., and entering into a new one for 17 years after May, 1852. The resolution was passed in violation ot Sec. 23, of the Amended Charter; Mayor Kingsland has vetoed it, and his act will meet the approbation of our citizens. It is a great pity that he has had to do the same thing twice, but this shows how recklessly the Board of Aldermen acted.

Minot's Ledge Lighthouse.

A model has been made for a cast-iron Tubular Lighthouse, for the purpose of a gas light, to be supplied from the shore, for Minot's Ledge.

I would suggest, as an improvement, a structure of lattice work, of iron wire. It would, probably, be less expensive, and would present less surface for the wind and waves to act upon. A light could be supported, which, by lettered fixtures, would proclaim to the mariner the name of the Light. The former structure would, undoubtedly, have been now standing, had there not been a house in the top thereof, upon which the wind acted, with lever power, upon its foundation and lower structure.

P.

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Patent Claims.

The List of Patent Claims had not arrived from the Patent Office when we went to press. We greatly regret this, as we like to have the claims every week,—hundreds of our readers anxiously await them.

An Interesting Patent Case.---An Example to Judge Kane.

Although we honestly and sincerely devote our energies to the advocacy of inventors rights, we also, because it is just, advocate the rights of the public at the same time. It is well known that we have given our reasons why we believed the late decision of Judge Kane, in the Telegragh Case, was wrong. The question was between two of our patentees, and the decision rendered by him, without a trial at common law ever having taken place between the parties, was one of the most despotic acts that we ever heard of, and would not be rendered by any judge under the monarchical government of England. We learn by the London Patent Journal, of Dec. 13, that a case came up before Sir J. Parker, the parties being Laird vs. Crippin—the plaintiff applying for an injunction to restrain Crippin from using his patent rudder, patented in 1843. The rudder was used on a ferry steamboat, named the Nymph. The following is Judge Parker's decision :—

"His honor said that he had no doubt of the plaintiff's title for the purpose of this motion. The only question was as to the infringement of plaintiff's patent by the defendants; and upon this he should express no opinion, but should leave it for a jury to decide. What, then, ought to be done in the meantime? If, on the one hand, the defendants were to be restrained from using the vessel in question until after a trial had been had at law, the defendants would have suffered irreparable injury by the suspension of the profitable employment of their vessel, if the verdict of the jury should be in their favor. If, on the other hand, the plaintiff succeeded, the infringement of his rights would admit of pecuniary recompense; for his only object was to obtain compensation for the use of his patent. In the present case, defendants were not making a systematic use of plaintiff's rights; for they were charged with infringing the patent in one only out of the three vessels they owned. The motion must stand over till the result of an action at law be known, defendants undertaking to keep an account of the receipts and expenditure of the vessel, and submit to my order the Court might make as to compensation (if any) to be made to plaintiff."

In this case the defendants were not patentees, and yet how careful Judge Parker was not to prejudge and injure their rights. In the case of Judge Kane, the defendant was an American patentee, and had a patent for his invention.

The Bain Telegraph.

It seems that the statement made last week, about the Bain Line having been sold to the Morse Co., is true, but the line which was sold was that between Washington and New York, and against which Judge Kane so summarily granted an injunction. The sale was made after the injunction was granted; an appeal had been taken from the Judge's decision. Both sides, it seems, felt uneasy. The Merchants' (Bain's Telegraph) Line, has published a card. stating that neither the suit spoken of, nor the compromise which grew out of it, have anything to do with it. "We are satisfied, says the card, "of our moral and legal right to the business we are prosecuting."—

They certainly have a moral right to it, for the invention, in essence and principle, is entirely different, but then Judge Kane would say they had no legal right to it. In our way of judging, that which is morally right should never be held legally wrong.

The end of the case between the Morse and Bain Lines, between this city and Washington, has ended like many other patent cases, (not a few of them in connection with the Woodworth Patent), of the stronger party absorbing by one way or another, the weaker. We dislike to see those who are right, although weaker, selling the morality of the question, —for such is the light in which we view it. We go for defending the rights of every patentee, be he who he may. Out of this question a free public telegraph may yet be brought forward. In all likelihood the owners of the Morse patent will make out a fine bill of expenses, and get a renewal of the patent, to make still richer five or six fat companies.

Extinguishing Fire---Air-Slacked Lime.

Messrs. Editors—In your paper of Dec. 27, there is a communication in relation to the extinction of a fire by air-slacked lime, and the writer has never been able to account for that phenomenon. We have not the article before us, at present, but will endeavour to explain the operation in plain chemical terms.

The formula of the carbonate of lime is C. O., Co. 2.,—of lime Ca. O. The carbonate of lime being burned dispenses with its carbonic acid, Co. 2,—retains its oxygen, and is then, as above stated Ca. O., that is, one atom of calcium and one of oxygen. This, exposed to the air, imbibes moisture and carbonic acid, and finally becomes a neutral carbonate of lime, combined with a portion of water, C. O., Co. 2 H. O. When this air-slacked lime was thrown on the fire, the carbonic acid and water were expelled, by which the flames were extinguished. Quarterman & Son.

New York, 1852.

Philadelphia Museum.

This Museum having been burned down, it appears that Mr. Barnum has suffered no loss by it, as he states, by a card, that he sold out his interest in it last summer. This is a pity, for if he had been the proprietor it might have been saved by his extensive share of annihilators. Dr. Colton could have applied them to save every wax-figure, from Daddy Lambert to the Witch of Endor.

Width of the Ohio River.

"Taking advantage," says the Cincinnati Commercial, "of the present frozen state of the river, our City Civil Engineer, Mr. Gilbert, had it carefully measured in several places, yesterday, for future reference; and we obtained from Mr. S. W. Irvin, the principal assistant, who made the measurement the following particulars :—At Main street the river was found to be 1200 feet wide; at John street 1370 feet, and at the intersection of Fifth and Front streets, 1100 feet, making an average of 1223 1-3 feet. The river is at this time 11 42-100 feet above extreme low water, and the above measurements are taken at the present water lines."

Influence of America and Webster's Dictionary in India.

It is well known that America is exercising a most important influence in the East Indies by her missionaries, and it is interesting to us to notice how the labors of men in every department of literature and science are made, in the providence of God to subserve the cause of our missions. As an example, we learn by the Journal of Missions, that the labors of Noah Webster, though designed primarily for those speaking the English language, are likely to prove of signal service in respect to unnumbered millions using widely different tongues. Mr. Spaulding, one of the oldest missionaries of the Board in Ceylon, after using his "Dictionary, unabridged," for about a year, pronounces it, "in every respect more complete than any one work, and even all other works of the kind, in the English language." The manner of using it, which has led to the above conclusion, he describes as follows :—'From the day of its arrival, four, six, or ten pages each day, for four days each week, passed under my eye, and every word which was thought would be useful to missionaries, to civilians, or to Tamil youth studying the English language, with its various shades of meaning was defined by Tamil synonyms, or idiomatic phrases.' In this way he has prepared the second edition of the English and Tamil Lexicon, a volume of nine hundred octavo pages.

Thus the labors of Dr. Webster are made available for a race amounting to twelve millions of souls. As all the missions of the principal Boards of the United States have been furnished with copies of the Dictionary, it may be presumed that this is only the commencement of the beneficial influence of this great work, which may be used as the means of preparing other dictionaries, for the instruction of other millions, in almost every part of the heathen world.

In connection with the literature of America, works of science frequently find their way from our country far up in the interior. Two years ago we received a letter from the Capital of Siam, from an American mechanic, who received the Scientific American in bundles about six times per year. Civilization, which at one time came from the east, is now going there from the west

Medicinal Cigars.

A London paper says:—The employment of various organic and inorganic substances of a volatilizable nature in the cigar form, has frequently been resorted to. In this way stramonium, cicuta, Raspail's camphor, and corrosive sublimate, have been used by means of tobacco deprived of its nicotine. The great efficacy of this last substance in some forms of ulcerated throat, in Dr. Landerer's hands, has rendered him very desirous of extending this form of medication. He prepared cigars, therefore by moistening tobacco freed from nicotine with tincture of iodine, a solution of mercury in sulphuric ether, or a solution of iodine of potassium. He found these cigars of great utility in some ulcerations of the throat. So, too, by moistening tobacco with an æthereal solution of hyoscyamin, he has relieved most obstinate spasmodic cough, without including any narcotism. Among other substances tried, he found a solution of creosote in spirit of wine and ether a very useful form in scorbutic ulceration of the gums. Cigars formed of this substance are also very useful in the tooth-ache. Arsenic cigars, formed by steeping the tobacco in Fowler's solution, have also been employed; and Dr. Landerer believes that this form of medication might be extended to a great variety of substances. These methods may be safe in the hands of scientific men, but should never be attempted by inexperienced individuals.—[Exchange.

[This is our opinion exactly; it would be dangerous for inexperienced persons to use them, and experienced persons should not do it either, except upon the principle of desperate diseases requiring desperate remedies, when such prescriptions may be justified in principle and practice.

Melting of Metals.

The enclosed memorandum, cut from an exchange, has elicited some discussion, and the query is, from what did Farenheit base zero or 0 in his scale—was it the point at which alcohol freezes or not? An article in your paper explaining this would be interesting.

J. L. C.

The following are temperatures on Farenheit's scale at which some of the most remarkable effects of heat are produced :—

2,786 °	Cast iron melts.
2,200 °	Gold melts.
1,986 °	Copper melts.
1,873 °	Silver melts.
1,560 °	Brass Melts;
1,141 °	Heat of a common fire.
980 °	Red heat.
218 °	Sulphur melts.
212 °	Water boils.
184 °	Alcohol boils.
98 °	Blood heat.
36 °	Olive oil Freezes.
31 °	Water freezes.
20 °	Wine freezes.
14 °	Oil of turpentine freezes.
1 °	Oil of vitriol freezes.
39 °	Mercury freezes.
45 °	Nitric acid freezes.
60 °	Greatest cold over observed in the Arctic regions.
135 °	Greatest cold yet produced by artificial means.

A mixture of 7 parts of snow and 4 of diluted nitric acid gives a cold of 30° below zero.

Three parts of snow and two of diluted acid reduce the temperature to 46° below zero.

[In Farenheit's scale the interval between the freezing and boiling points of water is divided into 180 equal parts, or degrees, which was chosen by Farenheit (or probably Roemer), from some theoretical considerations respecting the expansion of mercury, it being computed that the thermometer when plunged into melting snow contained 11,156 parts of mercury, which, at the temperature of boiling water, were expanded into 11,336 parts, being placed at 32° below the freezing heat of water. It has been frequently stated that this point was selected as indicating the temperature of a freezing mixture of snow and salt; but it appears from Boerhaave that it was adopted from a still more precarious supposition, namely, the greatest colds observed in Iceland, which was probably assumed to be the lowest natural temperature. The freezing point is thus marked 32°, and consequently the boiling point at 32+180=212. It must be admitted that this scale, though it possesses some advantages in the lowness of the zero point and the smallness of the divisions, is not well adapted to philisophical purposes.

Consumption of Tobacco and Tea in Britain.

During the year 1851, it appears that there has been a large increase in tobacco and tea, in consequence of the Great Exhibition and the influx of foreigners. In 1851, in the nine months ending Oct. 10th, the total quantity of unmanufactured tobacco entered for home consumption was 20,836,522 lbs., and during the corresponding period of the year, it amounted to 20,909,582 lbs., being an increase of 73,060 lbs. The quantity of manufactured tobacco and snuff during the same periods were respectively 154,066 lbs., and 166,311 lbs., being an increase of 12,245 lbs. in the nine months. In the consumption of tea there was also great increase. In the nine months of last year the consumption was 39,403,195 lbs., and in this year, 41,200,725 lbs., being an increase of 1,797,550 lbs., in the nine months. What would Sir Walter Raleigh and King James I., with his anti-tobacco blasts; what would Jonas Hanway and Samuel Johnson say to these statistics? It is satisfactory to add, that the consumption of spirits during the same period was less than in the nine months of the previous year by 72,849 gallons.

For One Dollar.

Sets of Volume 5, "Scientific American," (minus four numbers) will be furnished from this office for One Dollar.

For particulars concerning other back volumes and numbers, see notice on advertising page.

Bolt Heading Machine Patent.

The claim on page 126, respecting which the name was not received, we have since learned, should have contained, as patentee, the name of Nathan Starks, of Albany, N. Y.

January Thaws.

The news of freshets are coming in from all quarters; at Albany on the Hudson, and various places on the Connecticut river, great freshets had been experienced.

The Kossuth Hat, with the little black feather, was all the rage on New Year's Day. There was a perfect sea of plumes in the street. Well, out of fashion with the hard shells as soon as possible.

Our Minister at Paris, Mr. Rives, has not yet recognised the Dictator Government of Ham Napoleon. Mr. Rives' conduct meets with the commendation of all our people.

It is said that a terrible and singular disease has just broken out in Gallacia, Poland, which defies all the efforts of the medical faculty to explain or cure. It is an epidemic, and has received the name of the "sleeping fever."

A very rich mine of bismuth has been discovered in the French colony of Algeria.

Williamsburgh, N. Y.,—just across the river, and next-door neighbor to Brooklyn—became a city on last Monday. A great noise was made by the firing of cannon.

The New York Herald and the New York Art Union have got into a law tussle about a libel, said to be perpetrated by the former.

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TO CORRESPONDENTS.

J. W. C., of Miss.—Emery & Co., of Albany, N. Y., can furnish such a saw mill as you require, and Hoe & Co., of this city, can furnish the circular saw.

W. J. F. S., of Ill.—Before we can consent to answer yours of the 9th ult., we must be allowed to enquire the object you have in view. We have already responded to a number of your communications, and as our time is of some value we must decline any further correspondence without some remuneration. We mean to be courteous and attentive to our friends, but cannot suffer a too free use of our time.

T. I. B., of Tenn.—We published the report of the Committee on the Hillotype, that part of it which pronounced an unfavorable opinion. Nothing new has since turned up at any rate nothing to change the impression that it is no invention.

E. C., of N. Y.—We do not see any advantage to be gained in employing three small overshot wheels, for one large one. Two re-action wheels on one vertical shaft in a tight iron case, is a common plan for economising the water power, but many millwrights say that no advantge is gained by more than one wheel; give the subject some more attention.

J. Y. M., of S. C.—If you have cheap fuel, the steam engine is the best, The power of the water stream you speak of, is according to the quantity of water and the perpendicular height. The quantity you will have to find out. A column of water four inches in diameter, flowing through a pipe 100 feet high, at the rate of 300 feet per minute is equal to a steam engine of 4 1-2 horse power.

F. E. C., of Ma.—The recording of an assignment within three months according to the statute, is merely directory; and any subsequent recording of an assignment will be sufficient to pass the title to the assignee, except as to intermediate bona fide purchasers, without notice. Assignments should be recorded.

S, T., of Ct.—The object of your night telegraph is new to us, $1 received.

S. W. A., of N. H.—Perhaps you had better wait until the new model is ready, as it will not make much difference. It is expensive to patent abroad, but it might pay. If you conclude to do so, you had better go on as fast as possible. We can arrange the preliminaries by letter.

C. B. H., of N. Y.—Your arrangement for cutting bevel gearing possesses novelty of a patentable character as we view it. You can send a model.

S. A., of N. Y.—We could not give you a definite answer without knowing precisely what your plan is.

J. T. M., of Ohio.—We do not see any patentable feature embraced in your plan of a Saw Mill. The change is one not involving a new contrivance necessary to invention. The one you refer to is somewhat similar.

S. F., of Pa.—In Vol. 5 of the Sci. Am., we notice Arago's Astronomy as being for sale by Dewitt & Davenport, Tribune Buildings, price 25 cents.; probably mailable at 37 1-2 cents. Our thanks for your list of subscribers.

C. J., of N. Y.—You are aware that the Rotary Press, in a wide sense, is a self-feeder. We do not understand you exactly about printing a flat form in a rotary cylinder. If it was more fully explained, we would be able to give an opinion about its patentability.

J. J. J., of Tenn.—At the time the patent was secured (Jan., 1844) Mr. Covel resided at Glen's Falls, N. Y.

P. E. B., of Me.—A patent could not be obtained for the windlass on the top-gallant—worked by the capstan. If you examine Ure's Dictionary you will find the description of a capstan similar to yours.

Money received on account of Patent Office business for the week ending January 3.

O. M., of Mass., $10; A. F., of N. Y., $37; J. McD., of Pa., $10.

Specifications and drawings belonging to parties with the following initials have been forwarded to the Patent Office during the week ending Jan. 3:—

H. S., of N. H.; A. F., of N. Y.; W. D., of Pa.; C. M., of Mo.

An Important Paragraph.

Whenever our friends order numbers they have missed—we always send them if we have them on hand. We make this statement to save time and trouble, to which we are subjected in replying when the numbers called for cannot be supplied.

The Post Office Laws do not allow publishers to enclose receipts; when the paper comes regular subscribers may consider their money as received.

Subscribers ordering books or pamphlets are particularly requested to remit sufficient to pay postage.

Back Numbers and Volumes.

In reply to many interrogatories as to what back numbers and volumes of the Scientific American can be furnished, we make the following statement:

Of Volumes 1, 2 and 3—none.

Of Volume 4, about 20 Nos.; price 50 cts.

Of Volume 5, all but 4 numbers, price, in sheets, $1, —complete sets, bound, $2,75.

Of Volume 6, all; price in sheets, $2; bound, $2.75.

Of Vol. 7, all back numbers at subscription price.

New Edition of the Patent Laws.

We have just received another edition of the American Patent Laws, which was delayed until after the adjournment of the last Congress, on account of an expected modification in them. The pamphlet contains not only the laws but all information touching the rules and regulation of the Patent Office. We shall continue to furnish them for 12 1-2 cts. per copy.

Patent Claims.

Persons desiring the claims of any invention which has been patented within fourteen years, can obtain a copy by addressing a letter to this office;—stating the name of the patentee, and enclosing one dollar as fee for copying

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" 12 lines, 75 cts., " "
" 16 lines, $1,00 " "

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American and Foreign Patent Agency

IMPORTANT TO INVENTORS.—The undersigned having for several years been extensively engaged in procuring Letters Patent for new mechanical and chemical inventions, offer their services to inventors upon the most reasonable terms. All business entrusted to their charge is strictly confidential. Private consultations are held with inventors at their office from 9 A. M., until 4 P. M. Inventors, however, need not incur the expense of attending in person, as the preliminaries can all be arranged by letter. Models can be sent with safety by express or any other convenient medium. They should not be over 1 foot square in size, if possible.

Having Agents located in the chief cities of Europe, our facilities for obtaining Foreign Patents are unequalled. This branch of our business receives the especial attention of one of the members of the firm, who is prepared to advise with inventors and manufacturers at all times, relating to Foreign Patents.

MUNN & CO., Scientific American Office,
128 Fulton street, New York.

LATHES FOR BROOM HANDLES, Etc.—We continue to sell Alcott's Concentric Lathe, which is adapted to turning Windsor Chair Legs, Pillars, Rods and Rounds; Hoe Handles, Fork Handles and Broom Handles.

This Lathe is capable of turning under two inches diameter, with only the trouble of changing the dies and pattern to the size required. It will turn smooth over swells or depressions of 3-4 to the inch and work as smoothly as on a straight line—and does excellent work. Sold without frames for the low price of $25—boxed and shipped with directions for setting up. Address (post.paid) MUNN & CO.
At this Office.

MORTISING MACHINE.—Dear Sirs: I received the Portable Mortising Machine about 3 weeks ago; I have used it, and am very well pleased with it. It is the best plan of a machine of the kind I have ever seen. W. R. McFARLAND.
Nashville, Tenn., 1851.

This machine is simple, durable, and effective, and is boxed and shipped for the low sum of $20.
MUNN & CO.

FRENCH BURR STONES—We can furnish an excellent run of Burr Stones, 4 1-2 feet, for $145, carefully put upon ship board. Apply to
MUNN & CO.

WOODWORTH'S PLANING MACHINE—For sale, the right to use this justly celebrated labor-saving machine in the following States, viz., Pennsylvania west of the Allegheny Mountains, Virginia west of the Blue Ridge, Ohio, Indiana, Kentucky, Tennessee, Wisconsin, Iowa, Missouri, Arkansas, Texas, Louisiana, Florida, Alabama, and Mississippi. For particulars apply to the Proprietor, ELISHA BLOOMER, 208 Broadway. 17 12*

TO MACHINISTS AND FOUNDRY MEN.—The Maryland Machine Manufacturing Company will positively sell at public aution, without reserve, all their Machinery, Tools. Foundry Fixtures, &c., at the Factory, Ellicott's Mills, near Baltimore, on Wednesday, Jan. 14, 1852. The list embraces a great variety of new and modern-built tools, in good order and but little used, among which are 20 Turning Engines of various sizes; two superior Iron Planing Machines, one being of very large capacity: one superior Gear Cutting Engine; one Slabbing Machine —with a large and complete assortment of other Tools. The sale will commence at 10 o'clock. Terms of sale—All sums under $100, cash; over $100 and under $500, four months; over $500, six months.
GEORGE POE, Agent, Ellicott's Mills.

WHITAKER'S PATENT CRADLE—This is an invaluable addition to the Nursery, and no family should be, nor will be, without one of them, after a short time. In practical value, this invention far surpasses every other attempt of the kind. The novel and attractive features of Whitaker's Cradle are, 1st, that it will impart a swinging or rocking motion, as preferred; 2nd, it is propelled by the combined weight of the cradle and child; 3rd, it is destitute of any noise whatever, the moving power being derived through a spring crank: 4th, it will continue to rock or swing, regardless of the shifting of the child from side to side of the cradle; 5th, it can, at pleasure, be made to discourse music, which will continue as long as the cradle rocks, if allowed to do so; 6th, it possesses a regulator, with which it can be made to rock or swing fast or slow, as desired.—Union or State rights offered on accommodating terms. Address L. F. WHITAKER, Greenville, Pitt Co., N. C. 16 3*

FOR ONE DOLLAR A-YEAR.—Either of the following journals may be obtained:

THE AMERICAN PHRENOLOGICAL JOURNAL.—A Repository of Science, Literature and General Intelligence, amply illustrated with Engravings.

THE WATER-CURE JOURNAL and Herald of Reforms.—Devoted to Physiology, Hydropathy, and the Laws of Life, profusely illustrated. Terms the same.

THE STUDENT and Family Miscellany, designed for children and youth, parents and teachers. Illuminated with engravings. Terms the same.

THE UNIVERSAL PHONOGRAPHER.—Devoted to the dissemination of Phonography and to Verbatim Reporting, with practical instruction to Learners.—Printed in Phonography. Terms the same.

Either, or all of these Monthlies will be sent by mail to any Post Office in the United States, for one dollar a year each. All letters should be post-paid, and directed to FOWLERS & WELLS, No. 131 Nassau street, New York. 16 2t.

WANTED—To purchase, 10 or 12 ring and traveller Twist and Filling Frames, of 132 to 160 spindles each, new or second hand, in first rate order —also one pair of hand mules, of 500 to 600 spindles, each second-hand. Address DAVID TRAINER, Marcus Hook, Pa. 15 4*

TRAUTWINE ON RAILROAD CURVES.—By John C. Trautwine, Civil Engineer, Philadelphia; just published and for sale by WM HAMILTON, Actuary of the Franklin Institute Price $1.

"This is a really good work, and we heartily recommend it to our civil engineers."—[Scientific Am.

"We have carefully examined this work, and regard it as the best that has yet appeared on the subject," &c.—[Am. Railroad Jour. 8 10*

POST'S PATENT SLIDING DOOR FRONTS—For Stores and Public Buildings; a new, cheap, and simple fixture for securing store fronts, which renders them fire and burglar proof, has been invented and patented by the subscriber, who is now prepared to sell rights. Messrs. Quarterman & Son, 114 John st., N. Y., are general agents. Address (post paid) Wm. POST, Architect, Flushing, L. I. 6 3m

BILLINGS PATENT BAND WRENCH, for Wagons and Carriages.—This article is fully described and illustrated by engravings in No. 7, Vol. 7, of the Scientific American. The Patent Band Wrench applies to wagons and carriages where the common or square nut is used. They are perfectly tight and prevent all dust and dirt from reaching the axle. The wheel is taken off by means of a small pocket key. A Silver Medal was awarded this article by the American Institute at their late Fair in this city. The Bands are manufactured by the Patent Band Wrench Co., located at Claremont, N. H. Smith Van Horn & Co. are the agents for this city. Orders addressed to them, as above, will meet with prompt attention. A. M. BILLINGS,
12tf General Agent for the Co.

TO STAIR BUILDERS—"The Universal Stair Builder," just published by R. A. CUPPER, Architect, New York, shows plans of the various forms of Stairs, with a new method of sawing the twist part of any handrail and joints, square, from the face of the plank, and to a parallel width, the same as for any horizontal work, which can be done at the sawmill for one-sixth part of what it costs by hand.—The saving of material and labor is from 50 to 100 per cent. The work is beautifully executed, and the diagrams drawn to a large scale, so that the simplest mind can understand it. Price $6. For sale by Wm Gowans, 178 Fulton st., N. Y.; Benjamin Green, 124 Washington st., Boston, Mass., and at 240 West 26th st., N. Y. Books can be forwarded to any part of the United States, by enclosing the money. 15 3*

THE EXCELSIOR Sand and Emery Papers. are offered as new and superior articles, being manufactured by an improved process; the paper is made from the best Manilla hemp, and consequently is very strong and lasting; the grit is of the sharpest and most enduring kind, and is firmly attached to the paper with a remarkable evenness of surface; their freeness from ridges, stripes, and other imperfections, recommend them to the notice of consumers. These papers have been used by many of our first mechanics, and are pronounced superior to all others. Every sheet is stamped Blanchard & Parsons, and warranted. Samples furnished at the office, No. 187 Water street (2nd story), New York.
14 6m* BLANCHARD & PARSONS.

PATENT CAR AXLE LATHE—I am now manufacturing, and have for sale, the above lathes; weight, 5,500 pounds, price $600. I will furnish a man with each lathe, who will turn and finish axles for 50 cents each, if desired. I have also for sale my patent engine screw lathe, for turning and chucking tapers, cutting screws and all kinds of common job work, weight 1500 lbs., price $225. The above lathe warranted to give good satisfaction. J. D. WHITE, Hartford, Ct. 7 6m*

1851 TO 1856.—WOODWORTH'S PAtent Planing Machines.—Ninety-nine hundredths of all the planed lumber used in our large cities and towns continues to be dressed with Woodworth's Machine. Price of the machine from $150 to $760. For rights in the unoccupied towns and counties of New York and Northern Pennsylvania, apply to JOHN GIBSON, Planing Mills, Albany, N. Y. 9 10*

LOGAN VAIL & CO., No. 9 Gold street, New York, agents for George Vail & Co., Speedwell Iron Works, have constantly on hand Saw Mill and Grist Mill Irons, Press Screws, Bogardus' Horse-Powers, and will take orders of Machinery of any kind, of iron and brass; Portable Saw-mills and Steam Engines, Saw Gummers of approved and cheap kind, &c. Gearing, Shafting, large and small, cast or of wrought iron. 11tf

BALLOONS.—I am prepared to manufacture Hydrogen Balloons of from 1 pound to 50,000 lbs. ascending power to order. Balloons capable of carrying up one or two persons always on hand. The Balloons will be of the most perfect construction, so that any person can, with certainty and safety ascend with them. Instructions to insure success given to purchasers gratis. JOHN WISE, Lancaster, Pa. 9 10*

P. W. GATES'S PATENT DIES FOR CUTTING SCREWS—Patented May 8th, 1847.—This Die cuts Screws of any size, V or square thread, by once passing over the Iron. Also, Lead Screws for Lathes, Hoisting Screws, &c. All orders for Dies and Taps, with or without machines, will meet with prompt attention by addressing P. W. Gates, or Gates & McKnight, Chicago; Marshall, Bement & Colby, Philadelphia; Woodburn, Light & Co., Worcester, Mass. References—All the principal machine shops in New York, Philadelphia, and Boston. 13 6m*

CHAS. W. COPELAND, Consulting and Mechanical Engineer, Surveyor of Steam Machinery, &c, No. 68 Broadway, N. Y.—Superintends the construction of steam vessels, and steam engines and machinery of every description; specifications and contracts prepared; also, general plans and drawings in detail furnished. Steam engines surveyed and valued, and condition reported. Mr. C. also acts as agent for the purchase and sale of steam vessels, steam engines, boilers, &c. 14 4*

ADIRONDAC American Cast Steel.—This steel has recently been greatly improved in uniformity, soundness, strength, and toughness. It is purely American, and will be sold as low as the imported; this improved quality is warranted superior to any other in market. Friends of home industry are requested to try this new and uniform steel.
QUINCY & DELAPIERR,
15 6* Warehouse 81 John st., N. Y

HAWKIN'S Stave Dressing Machine—Is now in operation in the city of Milwaukie, Wis., and will dress from 6 to 8000 staves per day, ready for the truss hoops, and at one operation. Rights for States and Counties, and also machines, for sale, apply to WM. HAWKINS, Patentee, Milwaukie, Wis. 15 20*

A. B. ELY, Counsellor at Law, 46 Washington st., Boston, will give particular attention to Patent Cases. Refers to Munn & Co., Scientific American. 13tf

SCRANTON & PARSHLEY, Tool Builders, New Haven, Conn., have on hand six 12 ft. slide lathes, 28 in. swing; also four 8 ft. do.; 21 in. swing, with back and screw gearing, with all the fixtures; one 5 ft. power planer; 12 drill presses, 4 bolt cutting machines, 30 small slide rests; 5 back geared hand lathes, 21 in. swing; 15 do. not geared; 8 do. 17 in. swing on shears 5 1-2 feet; 25 ditto with and without shears, 13 in. swing; counter shafts, all hung if wanted suitable to the lathes. Scroll chucks on hand; also index plates for gear cutting. Cuts of the above can be had by addressing as above, post-paid. 9tf

BEARDSLEE'S PATENT PLANING MAchine, for Planing, Tonguing and Grooving Boards and Plank.—This recently patented machine is now in successful operation at the Machine shop and Foundry of Messrs. F. & T. Townsend, Albany N. Y.; where it can be seen. It produces work superior to any mode of planing before known. The number of plank or boards fed into it is the only limit to the amount it will plane. For rights to this machine apply to the patentee at the abovenamed foundry—or at his residence No. 764 Broadway; Albany. GEO. W. BEARDSLEE. 5tf

WATTS & BELCHER, Manufacturers of Steam Engines, Lathes, Planing Machines, Power Presses, and Mechanics' Tools of all descriptions. Orders respectfully solicited and punctually attended to. Washington Factory, Newark, N. J. 7 20*

PAINTS, &c. &c.—American Atomic Drier, Graining Colors, Anti-friction Paste, Gold Size, Zinc Drier, and Stove Polish.
QUARTERMAN & SON, 114 John st.,
9tf Painters and Chemists.

MACHINERY.—S. C. HILLS, No. 12 Platt-st. N. Y. dealer in Steam Engines, Boilers, Iron Planers, Lathes, Universal Chucks, Drills; Kase's, Von Schmidt's and other Pumps; Johnson's Shingle Machines; Woodworth's, Daniel's and Law's Planing machines; Dick's Presses, Punches and Shears; Morticing and Tennoning machines; Belting; machinery Beal's patent Cob and Corn mills; Burr mill and Grindstones; Lead and Iron Pipe &c. Letters to be noticed must be post-paid. 13 tf

MALLEABLE IRON FOUNDRY, EASTON, Mass.—The subscriber continues to manufacture castings of every variety, for machinery and other purposes, of the best quality, at the above establishment, we have facilities for making castings 5 1-2 feet in length. Persons wishing castings can send patterns to Easton Express, Boston, Mass. All letters will be promptly attended to.
8 10* DANIEL BELCHER.

WOOD'S IMPROVED SHINGLE MACHINE—Patented January 8th 1850, is without doubt the most valuable improvement ever made in this branch of labor-saving machinery. It has been thoroughly tested upon all kinds of timber and so great was the favor with which this machine was held at the last Fair of the American Institute that an unbought premium was awarded to it in preference to any other on exhibition. Persons wishing for rights can address (post-paid) JAMES D. JOHNSON, New Haven, Ct.; or WM. WOOD, Westport; Ct., All letters will be promptly attended to. 37tf

LEONARD'S MACHINERY DEPOT, 109 Pearl-st. 60 Beaver N. Y.—The subscriber is constantly receiving and offers for sale a great variety of articles connected with the mechanical and manufacturing interest, viz.: Machinists' Tools—engines and hand lathes; iron planing and vertical drilling machines; cutting engines, slotting machines; bolt cutters; slide rests; universal chucks &c. Carpenters' Tools—mortising and tennoning machines; wood planing machines &c. Steam Engines and Boilers from 5 to 100 horse power. Mill Gearing—wrought iron shafting; brass and iron castings made to order. Cotton and Woolen machinery furnished from the best makers. Cotton Gins; hand and power presses. Leather Banding of all widths made in a superior manner; manufacturers' Findings of every description. P. A. LEONARD. 10tf

MANUFACTURE OF PATENT WIRE Ropes and Cables—for inclined planes, suspension bridges, standing rigging, mines, cranes, derick, tillers &c.; by JOHN A. ROEBLING; Civil Engineer—Trenton N. J. 47 1y*

RAILROAD CAR MANUFACTORY—TRACY & FALES, Grove Works, Hartford, Conn. Passage, Freight and all other descriptions of railroad Cars, as well as Locomotive Tenders, made to order promptly. The above is the largest Car Factory in the Union. In quality of material and in workmanship, beauty, and good taste, as well as strength and durability, we are determined our work shall not be surpassed. JOHN R. TRACY,
39tf. THOMAS J. FALES.

IRON FOUNDERS MATERIALS—viz.: fine ground and Bolted Sea Coal; Charcoal, Lehigh, Soapstone and Black Lead Facing. Iron and brass moulding sand; Fire Clay, Fire sand and Kaolin;—also English, Scotch and Welsh Fire Bricks—plain arch, circular and tower cupola—for sale by G. O. ROBERTSON Liberty place, between 57 and 59 Liberty-st. (near the Post Office) N. Y. 7 12*

McCORMICK'S PATENT REAPERS AND MOWERS.—1700 of these machines, for which the great Medal of the World's Fair was awarded, are being manufactured at Chicago, Ill, with the intention of supplying the South-eastern States for the next harvest The gold medal of the Chicago Institute was recently awarded for this Reaper and Mower, tested against two other mowers, in cutting prairie grass; and the first premium of the State Agricultural Societies of Wisconsin, Michigan and Pennsylvania, were also awarded at their late Fairs. Price $120 at Chicago, and $122 delivered at Philadelphia; terms otherwise accommodating. 9tf

PHOTOGRAPHY—A Treatise on the Chemical changes produced by Solar Radiation, and the production of pictures from Nature by the Daguerreotype, Calotype, and other Photographic processes—by Robert Hunt, Professor of Mechanical Science in the Museum of Practical Geology, author of "Researches on Light," "The Poetry of Science," etc.: with additions by the American Editor. The above is the title of a new and complete work upon the Daguerreotype and Photographic art: 12mo. 290 pp., containing 77 illustrations, with fine likenesses of Daguerre and Niepce. Bound in cloth, and forwarded by mail free of postage at the following rates —one copy, for any distance under 500 miles. $1,25; over 500 miles and under 1500, $1.38; any distance over 1500 miles and under 2500. $1,50. Post-Office stamps taken. Address (post-paid) S. D. HUMPHREY, Publishers, New York. 16 3*

VENTILATION.—Mr. Ruttan, of Coburg, Canada, is desirous of an opportunity to direct the erection (for ventilation) of a good dwelling or school house in the city of New York. For particulars inquire at the Scientific American Office. 15 10*

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SCIENTIFIC MUSEUM.

New Photographic Process.

The London Athenæum has received a communication all the way from Patna, in the East Indies, from a Mr. C. J. Muller, on a new process of photography.

"A solution of hydriodate of iron is made in the proportion of eight or ten grains of iodide of iron to one ounce of water. This solution is prepared in the ordinary way with iodine: iron turnings, and water. The ordinary paper employed in photography is dressed on one side with a solution of nitrate of lead (15 grains of the salt to an ounce of water). When dry, this paper is iodized either by immersing it completely in the solution of the hydriodate of iron, or by floating the leaded solution. It is removed after the lapse of a minute or two and lightly dried with blotting-paper. This paper now contains iodide of lead and protonitrate of iron. While still moist, it is rendered sensitive by a solution of nitrate of silver (100 grains to the ounce), and placed in the camera. After an exposure of the duration generally required for Talbot's paper, it may be removed to a dark room. If the image is not already out, it will be found speedily to appear in great strength, and with beautiful sharpness, without any further application. The yellow tinge of the light may be removed by a little hyposulphite of soda, though simple washing in water seems to be sufficient to fix the picture. The nitrate of lead may be omitted, and plain paper, only treated with the solution of the hydriodate of iron, and acetic acid, may be used with the nitrate of silver, which renders it more sensitive. The lead, however, imparts a peculiar calorific effect. The red tinge brought about by the lead may be changed to a black one by the use of a dilute solution of sulphate of iron—by which, indeed, the latent image may be very quickly developed. The papers, however, will not keep after being iodized."

Nutmegs Indigenous to California.

One day last May, says the Alta Californian, we were presented with a very fine specimen of nutmeg by one of the delegates to the Whig Convention, who assured us very complacently that it was a native of California. We as complacently received it, supposing it was an assurace based upon Mrs. Opie's license, when the gentleman reiterated the fact, and confirmed it with the information that his brother had gathered a number of them from some nutmeg bushes that were growing a few miles from Placerville. Another gentleman who was standing by declared that he had seen many of them, and that great crops could be gathered with little difficulty in the fall season. We concluded that we would make the matter a subject of a paragraph upon our return, but a fear of being badly "sold" induced us to wait for further evidence. Some time after, Col. Forman assured us that he had seen some that were plucked during the formative stage of the spice, whilst the nutmeg was in a pulpy condition. We still hesitated to announce the aromatic as indigenous to California, but inasmuch as we have since been informed by Gov. Bigler that he saw a large quantity of them growing last summer, and that he had sent for some of them for special cultivation, we deem it very safe to announce it as a new resource of California.

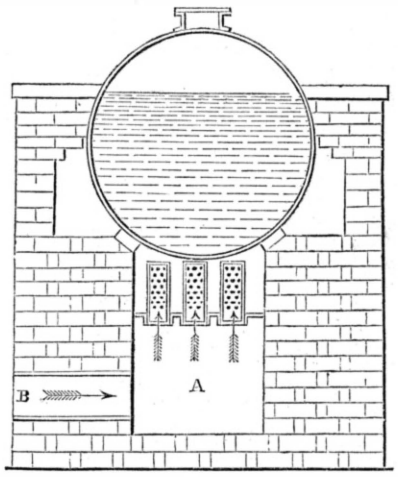
Salmon Fishing.

A Marysville (California) paper gives the following account of the manner in which the Indians catch salmon :—

We witnessed a new and exciting kind of sport yesterday morning. Salmon of huge dimensions, and in great numbers, accompanied by thousands of the smaller fry, were then struggling over the shoals in the river opposite our city. Thither the Indians promptly repaired with their spears, where they at once commenced an indiscriminate slaughter. They were captured in large numbers and in the following manner. A small barbed spear is attached to a straight pole some twelve or fifteen feet in length. On the fish being wounded, its struggles immediately detach the spear from the pole, but they are made fast together by a strong cord, some eighteen inches in length, by the aid of which they are sately towed to the shore. The taking and securing was performed by the Indians with great skill and dexterity, and excited the curiosity of hundreds who were watching their operations from the river bank.

On Boilers.---No. 7.

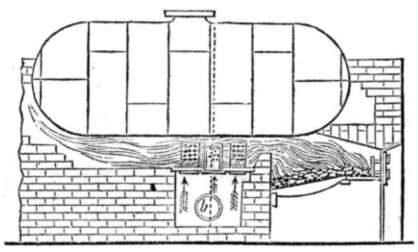
Fig. 14.



Argand Furnace.—Figure 14 is a cross section of a boiler and furnace, and fig. 15 is a longitudinal section. It is the invention of a Mr. Williams, of Manchester, Eng., and an account of it was published a few years ago in a pamphlet. It is designed for consuming the smoke. Every cubic foot of coal gas requires 10 feet of atmospheric air to effect its entire combustion, and every ton of coal is capable of giving off 10,000 cubic feet of gas, which, under the conditions just stated, would have to be supplied with 100,000 cubic feet of air; that in ordinary furnaces, air cannot be admitted without cooling down the furnace. It is a desideratum to admit this air, and so attain the combustion of the gas; and many plans of admitting air to furnaces have been tried.

A chamber is formed behind the bridge of about the breadth of the area of the back of the bridge, and the same width, the depth being regulated by the level of the ash-pit. In the mode of setting the furnace here represented, it may be observed that it is only one of many that may be adopted to accommodate the form and position of different boilers, as well as their size, or the object for which they are intended, whether for power or for steaming. The plan, however is selected from its bringing at once before the eye the action of the furnace when seen through a spy-hole in the

Fig. 15.



flue, as well as for the appearance of this arrangement being exceedingly striking and beautiful. Its operation would be thus :—The chamber being air-tight, and covered over with an iron plate, air is admitted through a pipe or other opening, *b*, or B, fig. 14. The air now rises, and takes the course of the arrows, enters a row of perforated pipes, quite open at bottom, and fitted into collars in the iron roof of the chamber. The tops of all the pipes are closed, while all round they are studded over with ¼ inch holes, 1 inch apart; the air, therefore, escapes through these holes, and nowhere else, in the form of small jets. At every charge of fresh coal on the fire, the first product is, not smoke, but a very large body of crude, impure coal gas, the unconsumed portion of which, as it passes the bridge, meeting the air, mingles with it, and instantly inflames, being encompassed with a hot gaseous atmosphere. The effect then is, that each jet of air seems to be a common gas flame. To those who are not familiar with the fact of flame from a jet of air in gas, it may be interesting to quote the observations of Professor Brande on this subject :—"I fill a bladder with coal-gas and attach to it a jet, by which I burn a flame of that gas in an atmosphere of, or a bell-glass filled with, oxygen, of course the gas burns brilliantly, and we call the gas the combustible, and the oxygen the supporter of combustion. If I now invert this common order of things, and fill the bladder with oxygen, and the bell-glass with coal-gas, I find that the jet of oxygen may be inflamed in the atmosphere of coal-gas, with exactly the same general phenomena as when the jet of coal-gas is inflamed in the atmosphere of oxygen."

The front section of the furnace shows the air-chamber, A, with the front bridge removed, and three rows of tubes set in the iron roof of the chamber. B is the air-flue, which has a regulating slide door on the outside. It will be observed, that the air is obtained independent of the ash-pit, and may be conducted to the air chamber by front or side air-flues, or by sheet or cast iron pipes.

For the Scientific American.

Knowledge Contained in the Scientific American.

Messrs. Editors—Not long since I attended a scientific lecture before a Lyceum, in this place, delivered by a gentleman from Boston, the subject being "The Lost Arts of the Middle Ages;" I could anticipate the lecturer verbatim, as it seemed to have been wholly compiled from the Scientific American, as published on page 315, Vol. 3. I speak of this to show the result of reading your paper, which I have constantly studied since the commencement of Vol. 3 up to the present time; the reading of one volume of it attentively is equivalent to three months' schooling. It should grace the library of the professional man as well as the mechanic; every young man should make it his touchstone of science, and not only prize it for its scientific information, but for its literary merits. J. G. S.

Reading, Mass., 1851.

Black Noses.

A resolution has been introduced into the Kentucky Legislature, which provides "that the keeper of the Penitentiary shall procure a suitable chemical dye, such as will stain the cuticle or outer surface of the skin perfectly black, so that it cannot be washed off, or in any way be removed, until time shall wear it away, and nature furnish a new cuticle or surface; and that with this dye he shall have the nose of each convict painted thoroughly black and renew the application as often as may be necessary to keep it so, until within one month of the expiration of his sentence, when it shall be discontinued, for the purpose of permitting nature to restore to the feature its original hue, preparatory to the second advent of its owner into the world.

Restoring to Life.

We have seen quite a number of notices about a young man in France, who was restored to life by the transfusion of blood, after being frozen up in the Alps for a month. This story, like a great number about persons being consumed by spontaneous combustion needs confirmation. When we see it done there will be time enough for believeing it, not till then.

LITERARY NOTICES.

Harmonia Sacra.—This work is a new collection of Anthems, Choruses, Trios, Duets, Solos, and Chants, for opening and closing public worship, dedications, and for singing societies. The Episcopal Church Service is added. It is edited by Edward L. White and J. E. Gould, and published by Oliver Ditson, Boston, and Gould & Berry, New York. We commend this book to choirs and families who love —and who does not love—the sacred melodies. No music is so lofty and inspiring as that which is termed "sacred;" it has a most ennobling, harmonizing, and sweetening influence on all circles where it is practiced in the right spirit. The selection of pieces in this book, exhibits good taste and great knowledge of music.

Clovernook, or Recollections of our Neighborhood in the West. By Alice Carey. J. S. Redfield, publisher, Clinton Hall, N. Y.—The contents of this interesting book are drawn from pastoral life, where elements are ever at hand for the eloquent pen : there is always something touchingly sweet in every association of rural life, whether amid the forests and uncultivated prairies of the West and South, or on the rigid hills of the North. Our authoress possesses the happy faculty of touching the tenderest spring of feeling, and conveying in beautiful eloquence the various aspects of our social being. This book will be found exceedingly interesting for the winter evenings.

The Universal Phonographer.—A monthly journal, devoted to the dissemmination of Phonography and to Verbatim Reporting, with practical instruction to learners. Printed in Phonography. E. Webster, Editor; Fowlers & Wells, publishers, $1. The first number is now issued; it is intended to promote the interests of the advanced phonographer, and forms an instructive book for beginners. Its pages are devoted to correspondence, original essays, and selections from the choicest literature of the age. A knowledge of this subject enables us to take down, with rapidity, all we hear spoken, and the present work constitutes a cheap instructor.

THE
SCIENTIFIC AMERICAN
To its Friends and the Public.

Commencing a new year, we take the opportunity to express our grateful acknowledgments to the patrons of the Scientific American for the deep interest manifested in its success. We aim to furnish a journal not only popular, but eminently practical in the several departments of Chemistry, Mechanics, Engineering, and Manufacturing. Without employing the ordinary appliances, such as local and general canvassers, we have mainly depended upon voluntary subscriptions, allowing the character of the journal to find its way to the regard of individuals. Our general expectations have not been disappointed, for out of the large list of cash-paying subscribers, whose names are familiar to us from a long association, we recognize many active energetic friends, whose influence we yearly profit by.

We are grateful for all favors, and as our success is centred in the support of that valuable class whose labors are not only enriching and adorning, but elevating the character of our country, we must still claim their active and co-operative sympathy. For the small sum of two dollars we are furnishing an Encyclopedia of the Arts and Sciences, covering over 400 pages, richly illustrating the progress of invention and discovery throughout the world. Considering that this sum is one-fourth less than the cheapest English publication, it may not be necessary to state that a large subscription list is required to sustain it.

The fact of its success is no longer predicated upon doubt; but, that we may be enabled to carry out our future designs, an increased subscription list will be necessary. We anticipate, from the continued support of our friends, that we shall be able to advance the Scientific American, in point of circulation, to a position second to none in this country; and we promise a journal not inferior in its character, size, and ability to any other.

The views promulgated through its columns have received the approbation of the American press, and it is a source of gratification to us that it has gained, and still is gaining a strong foot-hold in Europe, and is quoted as the leading American Scientific Journal. A recent London paper says, "it is excelled by few periodicals," and proceeds to regret that the English tax upon literature does not permit so cheap and valuable a work to circulate within the reach of the laboring and producing classes, whereby they may become, not mere machines, but, like most of our American Mechanics, intelligent, influential citizens.

No land is so highly favored as our own in respect to educational privileges—none where all the appliances are so easily and cheaply obtained—a cheap press and a system of free education, are the elements which enter largely into our National character. A people to be free and happy must of necessity be intelligent. We should not esteem our blessings lightly, but strive to improve them. It is unquestionably true that men, practically scientific, are among the most useful class in a community, and our greatness as much depends upon them as upon any other class. The statesman, the lawyer, the minister, and the farmer, have each their appropriate work, but in the great scheme of internal improvement, the mechanic, the man of science, is wanted.

We offer these suggestions as entirely relevant to our present subject, and urge our mechanics to become readers; and, if consistent with their feelings, subscribers to the Scientific American, for we feel assured that in fifty-two numbers they will find information worth to them infinitely more than the amount paid for it. It is difficult to maintain a good Scientific Journal at so small a price, as many can sorely testify from experience; and had we not a clear field at the commencement, and a tolerable capital, the Scientific American would not now enjoy its present position.

Through our extensive facilities as American and Foreign Patent Agents, we are enabled to furnish our columns with a most complete summary of all the new improvements; and having agents located in London and Paris, we are early notified of changes in Foreign Patent Laws affecting inventors' interests. We hope to improve the value of the Scientific American by constant and unremittimg care, and to secure a continued and increasing patronage from the public.

We hope our friends are not forgetting to exercise their usual kind offices, but are continuing to recommend their neighbors to subscribe and to form clubs for the new year.

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